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ABSTRACT

This collection of nine speeches, written by researchers and administrators, concerns the relevance of educational research in the making of educational policy in Australia. Some of the topics include the contributions of research to policy, some dilemmas of worldwide policy-oriented research, and establishing dialogue between researchers and policymakers. (Author/LD)

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EDUCATIONAL RESEARCH FOR POLICY MAKING IN AUSTRALIA

Addresses given to the
New South Wales Institute for Educational Research

Edited by John S. Shellard

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Consultative editorial panel:
L. C. Higgins, K. E. Sinclair, J. L. Sheppard

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Foreword

This book would be worthy of note as evidence to a public, both professional and lay, of the kind of question to which the New South Wales Institute for Educational Research has addressed itself during a year. It also makes available, to all who may be interested, papers from specialists in their respective fields. Its greater significance lies, perhaps, in the fact that the addresses and papers which are brought together constitute the first broad examination which has been published in Australia of some of the tasks involved in educational research for policy making. In the circumstances of its compilation, it is not presented as a systematic study. Indeed the independent contributions, while they may encourage the drawing of some general conclusions, serve as much to indicate the extent to which the general subject embraces such questions as those of procedure, of personal relationships, and degrees of responsibility among those involved. Nor are attendant circumstances lightly to be dismissed, for policy making like politics is an exercise in the art of the possible.

It is unlikely that there will be professional unanimity in regard to several of the matters discussed in this book. One welcome outcome of its publication would therefore be that it might stimulate further discussion and promote the production of further studies. The need for such continuing scrutiny is a concomitant of the special responsibility which falls upon the profession. For, in education as in public health, the special nature of many of the matters of concern thrusts the responsibility for initiating developments in policy upon members of the profession, whether they be administrators, research workers, or general practitioners. A government or a minister may initiate educational policy, either as a reflection of party policy or in response to some public demand, but the details of that policy and the manner in which it is to be put into effect will owe much to the professional integrity of advice given to the minister and to the informed skill with which that advice is tendered. There are, however, many developments in education, almost entirely professional in nature, which even when they do not call for the specific approval

of the minister acquire the nature of policy. In such situations, if the development is to be of benefit to children or to schools, everything will depend upon the circumspection and reliability of the original investigation of the problem, the manner in which feasible means of attaining the desired goal are devised, and the professional understanding with which the new development is put into effect.

For older members of the Institute, this book will have a particular interest, yet one which all who are concerned with educational research in Australia are likely to share. This book, a record of one aspect of the Institute's activities in the fiftieth year of its existence, reflects something of the elaboration of the educational scene in Australia which has taken place over half a century. In the late twenties, when the Institute was established, there was little sign of the involvement of the Federal Government in education, of the expansion of universities and the appearance of other institutions at the tertiary level, of the multiplication of bodies and authorities, or of Australian educational interest and commitment overseas. When the contributions to this book are seen against the background of the beginnings of the Institute, attention is especially drawn to the extent to which the theory and practice of educational research together with personnel and facilities for that research have developed, especially during the latter half of that fifty years.

The NSW Institute owes its establishment to Professor Alexander Mackie, already involved with Mr Frank Tate and Professor H. T. Lovell in the establishment of the Australian Council for Educational Research. When the initial meeting was convened by Professor Mackie at the University of Sydney, there were only two chairs of education in Australia. A two-year course in psychology was taught at the University of Sydney, as a branch of philosophy. In the second year of that course, a quite elementary introduction to statistics was provided. No education department maintained or saw the need for a research division. The first postgraduate course in research procedures in education was not to be provided until 1934, at Sydney Teachers College. In that year, the first essays in factor analysis were being made in Australia by the few who had had overseas experience. To be reminded of these facts is to enhance our appreciation of the task which Dr Cunningham and his early colleagues undertook in building up the activities of the ACER, and to understand the tentative nature of the first activities of the NSW Institute. Fifty years ago, there were few in the country who were qualified to carry out educational research and, in Australia, there were few resources

for preparing others. This lack of personnel was to be made all the more apparent by the development overseas of research procedures of increasing variety and sophistication.

Yet, amid the greater complexity of the educational task today and despite the emergence of a varied band of research workers, to which this volume bears witness, the ideas which Professor Mackie held in promoting the establishment of the NSW Institute still stand. While making no claim to research expertise himself, Mackie insisted that no professional assumption was immune from examination. He maintained that the first essential was reliably to establish the facts and, beyond that, to identify what lay behind them, whether they were facts about children, about community opinion, or about established school practice. Thereafter better practice could be developed. Above all, he was convinced that the health of an education system depended upon the maintenance of a practice of dispassionate enquiry, and on a readiness to develop procedures in the light of that enquiry. Fifty years later, with greater facilities and with more adequate techniques, these injunctions remain, not only for the Institute but for all who have the health of education at heart.

Harold Wyndham

Contents

	Page
Foreword Sir Harold Wyndham	v
Contributors	x
Introduction Perspectives of Research and Policy J. S. Shellard	1
1 An Administrator States the Case for Research R. E. Parry	11
2 The Research Contribution to Policy: A Researcher's Overview S. S. Dunn	18
3 A Political Perspective on Research and Education J. L. Carrick	27
4 Policy Decisions and Research Inputs B. R. Williams	36
5 The Research Contribution to Educational Practice J. P. Keeves	44
6 A Conceptual Analysis of Educational Research in an Administrative Context R. W. Rawlinson	69
7 The Establishment of Dialogue between Researcher and Policy Maker N. L. Baumgart and B. C. Low	77
8 World-wide Policy-Oriented Research: Some Dilemmas P. J. Foster	93
9 Research and Educational Policy: Reflections and Recommendations L. C. Higgins, K. E. Sinclair, and J. L. Sheppard	103
NSWIER Executive Members for 1978	118

Contributors

N. L. Baumgart — Associate Professor of Education, Macquarie University

J. L. Carrick — Senator, Minister for Education

S. S. Dunn — Chairman, Education Research and Development Committee

P. J. Foster — Professor of Education, Macquarie University

L. C. Higgins — Principal Lecturer in Education, Sydney Teachers College, and President, NSWIER, 1979

J. P. Keeves — Director, Australian Council for Educational Research

B. C. Low — Senior Lecturer in Education, Macquarie University

P. E. Parry — Under Secretary, New South Wales Ministry of Education, and Chairman, New South Wales Higher Education Board

R. W. Rawlinson — Principal, Alexander Mackie College of Advanced Education, and former Head, Centre for Research into Learning and Instruction, New South Wales Department of Education

J. S. Shellard — Lecturer in Education, Alexander Mackie College of Advanced Education, and Editor, *NSW Institute for Educational Research Bulletin*

J. L. Sheppard — Head of Department of Behavioural and General Studies, Cumberland College of Health Sciences, and Past President, NSWIER

K. E. Sinclair — Senior Lecturer in Education, University of Sydney, and Past President, NSWIER

B. R. Williams — Vice-Chancellor, University of Sydney, and Chairman, Committee of Inquiry into Education and Training

Introduction

Perspectives of Research and Policy

J. S. Shellard

Action without research

Research, to put it simply, involves 'finding out'. If this can be done in advance of further action, there are obvious advantages. This book seeks to make this point, among others, and to make it quite clear we might take a simple example. The youth who is now a paraplegic in hospital is there because he neglected to do some elementary research. He would not have suffered a broken neck had he searched the river for rocks before he dived in. Maybe he did look, cursorily. But his investigations would have had to have been sufficiently thorough to discover the submerged rocks as well as the visible ones, especially at the point where he dived. Otherwise he could be said to have generalized from an unrepresentative sample (the visible rocks), a process that brings to mind the definition of a statistician as 'an individual who drowns in an eight-foot hole in a river with a mean depth of four feet'.

It is obvious that there are advantages in finding out first. We all know this even from such potted wisdom as the adage, 'Look before you leap!' which, you may say, is just homely common sense and not to be glorified with such a technical term as 'research'. As this book is concerned with education, it may be worthwhile insisting that a lack of research, or the misuse of it, is likely to have consequences just as drastic (notably in the lives of those being educated) as the careless use of a river. One option available in this present case is for the local authorities (the policy makers) to erect a sign, 'No swimming allowed!' Presumably the risk of future broken necks would thereby be raduced, but so would the use of a community recreational facility. Observe that this situation is created not only by what might be found to be an over-reaction to an isolated incident but also by

9

failure to seek basic causes. Perhaps the discovery of these would stimulate administrative action such as delineating safe areas for diving or swimming, or removing some rocks. Such solutions could well prove superior to a blanket edict which in effect produces a situation of no action. Large educational organizations which have built up a tradition designed to preserve the status quo and to protect its servants can find a solution to many of their problems by substituting such blanket action for adequate research procedures.

A recent example of this tendency derives from a radio news report that, as a consequence of the discovery of private information on discarded print-out scrap paper used by children in a city school, all future use of such paper was to be banned. In a world where the chopping down of more trees to make more paper is not consistent with the preservation of dwindling natural resources, one might well ask whether some other solution to the problem could be found.

The search for other solutions can provide a service to policy makers, which is the kind of argument this book tries to present in a more general way. One is justified in saying that a more rational approach (which would take a little more time) could have been derived from more careful deliberation, the collection of all the facts, and sifting out possible solutions.

SOME RESEARCH QUESTIONS

How do we know when to do research; or how can we know what research will be worth doing? The controversy about the merits of basic and applied research need not concern us at this point, except to say that the distinction is often difficult to make. Who can say whether pure research will find an application? What one can say is that it originated with someone asking a question, maybe as abstract a one as that for which Wordsworth defied an identification of causality:

> Who shall point with a wand and say
> This portion of the river of my mind came from yon fountain?

While we do not know what research may be useful, some indication comes from the fact that questions are raised. The psychoanalyst postulates a theory that the river of someone's mind has its source in some childhood experience and he would like to verify his hypothesis with enough evidence to produce a valid theory. He may then apply this to other cases. In a similar way, administrators,

especially those who are responsible for policy making (and what is a policy but a generalization about the alternatives in future action?) ask questions about the likely effects; and it is the researcher who is often given the task for trying, as it were, to locate the rocks in the river. More of this as the researchers themselves tell in later chapters how difficult such a task can be, especially as they deal with conflicting points of view. Thus the making of education policy consists in some reconciliation of such views or in a choice of one in preference to the other.

A current example of such diverse views might serve to emphasize how necessary research can be. The first statement derives from the former Director of the Education Research Unit of the Australian National University, and is taken from an address given to the New South Wales Institute for Educational Research. The second one is an extract from the headmaster's address at the speech day of a well-established independent school. It can be assumed that in each case, those to whom the statements were made were, by and large, favourably disposed to the underlying philosophy. The topic is that modern day chestnut of public examinations. Here is the Director's statement.

> [Examinations] epitomize the dominant role of the teacher; they judge human beings and reduce persons to a numerical cypher on a single dimension called order of merit; they are a mechanism for allocating manpower to slots in a hierarchically organized capitalist society; because they can only test what is quantifiable, they ignore the most valued parts of the human condition which are subtle and subjective; and because they are competitive . . . they do violence to the proper relation which should exist between student and student, as well as between student and teacher.[1]

However not every body believes that examinations are all bad. Here is what the Headmaster said:

> To succeed in the Higher School Certificate . . . demands that the examination is a trial of character as well as a test of knowledge. The growing tendency for candidates to 'come out of the exam room and burst into floods of tears' — as was reported in the media recently — merely shows that these candidates were not prepared by their school to meet, or had not understood, the psychological demands which a public examination places, and should place, upon a candidate . . . Candidates for the HSC must prepare themselves for the examination both academically and psychologically. If they work over the two years, if they study thoughtfully, thoroughly, and truthfully over the same two years, the examination will have no terrors, academic or psychological. However, if candidates lack true scholastic perseverance and integrity, they will certainly be found wanting on the day both in knowledge and character. All candidates should understand that public examinations are not meant to be easy.[2]

Even if it were to be argued that these were just isolated individual views, it remains true that the issues they raise are national ones. Indeed the policy makers need to make some decisions about examinations and, ideally, they should be able to go to the researchers for data about these conflicting views and their probable validity.

WHOSE CONCERN IS POLICY-ORIENTED RESEARCH?

This may appear to be a somewhat simplistic approach to a book in which some of the country's foremost educational researchers and policy makers put forward their views. Yet, as a first step in the communication of the varied though not necessarily conflicting views expressed, it is necessary to clear the lines of communication so that the main thrust of what is being said is made clear. This is particularly so in the expectation of a wide readership. While such a publication as this can be expected to serve a number of purposes, perhaps the most practical initial approach might be to anticipate the book's probable readership groups. They range from those with great experience in specific fields of research and administration to others whose interests might be described as general but whose support might in the long run be crucial, even in terms of an educated electorate to support productive policy making. Perhaps we might briefly refer to these readership groups.

Firstly there is the obvious one. A record of addresses given to Institute members over a year is going to be of interest as a permanent document to the membership. It represents an expanded version of the kind of publication produced and circulated under the name of the *NSWIER Bulletin*, which generally consists of a collection of summaries of addresses whereas this book records the complete text. While the *Bulletin* does not circulate far beyond our own membership, this book is planned for a wider audience.

Secondly it could be expected that those who are involved in the field of educational research and have many times met the kind of problems that are raised by our contributors would be keen to share the thoughts of others about their field and the implications. If this was all that was expected from the book, then this chapter would be largely unnecessary.

Thirdly, there is the group who might roughly be called administrators and who appear to be a very mixed bag. We should not deny the inclusion of the classroom teacher, to whom educational re-

search ought to be of maximum assistance. The teacher is often restricted by others further up the hierarchy and it is these who have the greatest claim to have some influence on policy. They should have an interest to discover what insights the researchers have. Who knows what savings or short cuts or improved relationships might result?

Fourthly there are the general readers — not researchers, not involved in the kind of administration that determines policy, but individuals mindful of the importance that the linkage of research to policy can have. This group is hardly co-extensive with the general public as the lectures were intended for a fairly exclusive audience, with membership of the Institute itself limited by some fairly restrictive stipulations. Among the general readers, there are enquiring minds prepared to delve into a field that so many commend but few seem prepared to support, especially in a time of economic stringency.

The serious student, the thoughtful educationist, the responsible executive or planner will all find grist for their mills in these published talks. One may express this confidence because the addresses were neither extempore speeches nor lectures in the form of edicts delivered without fear of comment. The Institute meetings always allow a generous amount of time for questions and discussion and often speakers have to face penetrating interrogation. The speakers, since delivering their addresses, have had the opportunity to refurbish their contributions. What has now been produced would not qualify as light reading. For all the readership groups identified, there is useful information to be found, even if only a selection of the articles is read.

THE CONTRIBUTORS

The articles are not in the order in which they were given. The last two retain their places as, in the case of Professor Foster's comparative education study, a widening of the perspective to deal with countries other than Australia and, properly in the contribution of the panel, a summing up of the previous addresses. The year began with Dr Rawlinson's Conceptual Analysis. As this address and that of Dr Baumgart adopt a theoretical approach, there appeared to be advantage in having a foundation of fact and description that would give substance to the emergence of positive theories. Dr Rawlinson is well qualified both as researcher and administrator, which tends to

make his theorizing all the more relevant. Rather than launching into all these fields together — research, administration, and their theoretical base — it was considered wiser to allow an administrator and a researcher to put their points of view, to add some of those who are in the thick of the cut and thrust of policy making (the Federal Minister for Education and the Chairman of our latest educational committee of inquiry), then add a solid core of research experiences and outcomes as related by the Director of the Australian Council for Educational Research. The presentation of the more abstract implications of the research-policy-making field will prepare the reader to assess whether the hypothesis and structures and categorizations put forward can be sustained in the context already outlined. Finally from all the fact, judgment, vision, and prophecy are drawn some recommendations to guide those in whose hands lies the future.

Might it be added that the logic of this approach was influenced by an editorial preference to stimulate and retain the reader's interest so that the most profit can be gained from this report. There was the suspicion that the early introduction of profound theory would tend to discourage all but the dedicated student, whereas the interest aroused by the succinct presentation of the research and administration scenario, as observed by some highly qualified people, might stimulate a desire to discover if some generalizations or even permanent principles could be found. This is the editor's own estimate and there is the opportunity to read the articles in whatever order best suits the reader's own interests. It would not seem strange, for instance, if a reader with a prime interest in comparative education were to begin with Professor Foster's address, abstracting from this some potentially universal principles which might well be kept in mind with reference to the other contributions. There are some very significant links between some of the overriding assumptions upon which the Williams Committee has been operating and those which Professor Foster sees as common to developing nations. What is it that we educators are trying to do: contribute to the economic development of the country or contribute to the growth of mature and integrated individuals? If the answer is, 'Both', then how can a balance be maintained?

Another comment on the logic of the present order is necessary. Each of the contributors was asked to make his distinctive contribution to the theme: Research as a basis for educational policy making.

Even if a contributor's strength and qualification happened to be either administration or research, he began his task with both areas in mind. If Mr Parry can most accurately be called an administrator (and the title given his chapter infers this), it is not to be expected that what he has to say will even approximate an exclusive study of administration and policy making. Each of the speakers may have looked at the problem raised from his own unique viewpoint but each of them tackled the whole problem and not only one aspect of it. Senator Carrick is readily recognized as a politician and it is from this point of view that we should expect him to speak. In his long association with education, it would be surprising if he had not some close experience of educational research and, as he speaks as a politician, he relates the needs which he feels in his present capacity to the service which the researcher can supply so that his political decisions will be as wise and accurate as possible. Mr Dunn, as a researcher, provides us with some useful data about research contributions, and he also raises some questions about value judgments, timing, generalizability, and funding that only the policy makers can answer. This is not to say that any claim can be made to provide all the answers. One criticism of the book could well be that it raises more questions than it answers. That, in itself, would not be a bad thing. To recognize the problems and to frame the questions to be answered are necessary steps in the progress of any research and it is in the researcher's interest for questions to be raised.

A further comment might be that the questions are largely old ones, that there is nothing new about the issues that are discussed. This might be another way of saying that the questions raised are difficult; or they would have been solved long ago. If this is so, then they certainly deserve our continuing attention. They will not go away by being ignored. If they are so long term and so difficult, it is clear that we should be giving them more attention: which is not to say that they have been completely neglected in the past.

FLASHBACK ON PREVIOUS ADDRESSES TO NSWIER

Anyone who has attended Institute meetings over the last decade or so might be found to agree that there is nothing new about some of the issues raised in these published talks. Among the wide variety of speakers we have had over the years there have been many expressions of frustration, even despair, and such comment has derived

from overseas speakers quite as frequently as from those working in this country. Maybe the more qualified and secure in his academic niche a person is, the more he is prepared to say that he does not have all the answers.

Professor Benjamin Bloom, for instance, was asked by one member of his Institute audience to comment on research on the psychomotor domain. His answer was brief and to the point: 'Terra incognita!' he replied, 'I know nothing about it!'[3]

Professor Philip Vernon's address was recorded and the tape is worth studying. One aspect of it that was quite impressive was the very tentative nature of the conclusions reached about the nature/nurture controversy (which readers will readily recognize as a fairly ancient field). At one stage he said, 'Everything in the world can be explained by something we know nothing about'.

Dr Margaret Mead spoke to the Institute in 1973 on 'Primary education, et cetera' and, though one comment was that her talk concerned the second part of her title more than the first, her views were perspicacious and are no doubt still relevant. She emphasized how much times had changed and how the questions to be answered were different. No longer when asked for three reasons why the world is round will the child reply, 'Mum says so, the book says so, and you say so!' With her intense interest in New Guinea, her comments have a relevance in comparative education that relate to Chapter 8. Western education had achieved a situation among New Guineans where a small proportion succeed and the rest were sent back to the village as failures: 'The concept of failure has been exported to the whole world'.

A year later Professor Boyd McCandless spoke to the Institute about 'Project success environment' and his 'benign behaviour modification'. 'The major problem was philosophical as the teachers were so used to punishing behaviour.' He postulated and implemented three reinforcing rules:

1 Make sure students taste success.
2 Always assign 'do-able' tasks.
3 Reinforce frequently and immediately.

These have all been inputs to the research discussion which became inputs into the Institute program and enlightened a fairly small and select constituency. This book strives to enlarge this group and to pass on the questions to a wider audience. Who knows whence future answers may derive?

A CONTINUING TENSION: THE CONFLICT OF AIMS

There is one tension that underlies the warp and woof of this book and that has appeared on many occasions in Institute discussions. It is the fundamental conflict of aims that affects the close co-operation between the researcher and the policy maker. Dr Rawlinson mentions it when he says that the researcher is academic-oriented and the policy maker is administration-oriented. He fails to find an adequate placing for the researcher in the administrative structures. The researcher's authority is vested in his work, not his position. He must uphold 'the integrity of his discipline'. Although it is the administrator who implements policy, the degree to which an administrator is free to make policy is debatable. 'He who pays the piper calls the tune' may lead one right back to the politician. Here is the ultimate source of most of the funding though the administrator may have some latitude in its allocation. Though he may have various degrees of freedom within limits that may only be roughly defined, ultimately the administrator is controlled by the politician.

This line of argument might be pressed to the point where one could conclude that, as Senator Carrick is our only politician contributor, he alone can lay claim to being a policy maker. As those who assist and advise him, and who implement the policy for which he is ultimately responsible, would need to be mere ciphers if they did not have some influence on the process, perhaps we should not press this burden so heavily upon him alone.

Whatever conclusion one may reach as to where the responsibility for policy making is lodged, the point can be made, following Dr Rawlinson's argument, that the purposes of the researcher and the policy maker (including the administrator who carries out the purposes of the policy maker) are different in kind. Research of any kind ought to be the pursuit of truth, but politics is the art of the possible. While the researcher deals often with the ideal, the politician plots a course through the rocks of the actual. When policy is not formed by thorough reference to the facts (assuming the researcher can provide such a chart to the policy maker) the researcher can be an embarrassment to the policy maker who is looking for short cuts. These comments reflect a recurring theme in Institute meetings where it is mainly the researcher who has the floor.

There have been complaints about the failure of administrators to use research results properly, or to seek them at all, or to demand them in too much haste. Sometimes the researchers themselves, as

they have worked through problems, have begun to appreciate that their findings do not have sufficient meaning or purpose without considerably more attention being given to the assumptions on which they are based. This can be one of the outcomes of their research, even if it is both unexpected and unpalatable. Sound and logical conclusions can only be based upon consideration of all the variables. As it is the researcher's duty to provide accurate and balanced findings, he can do no other than follow through the research process to such a conclusion. What the policy maker then orders the administrator to do is his responsibility. However it should be admitted that the researchers may have their own set of weaknesses. They may not always have shown the greatest discrimination and have chosen the easy road rather than the more difficult but more direct one: they may even have become preoccupied with their own perpetuation. This latter tendency is aptly reflected in the Thaves cartoon where TV newsreader reports, 'A five year government study released today reveals you can make darn good money from a five-year government study.'

This is a negative approach. Let us assume that the policy makers are concerned with the greatest good from the greatest number; that the administrators are more concerned that the system works than that it allows them to build separate empires; and that the researchers so consistently display their own dedication to the truth and to high levels of efficiency that the policy makers and administrators will not move without taking full advantage of the facts and tendencies about which the educational researcher can inform them. In such conditions lies Utopia for educational research, and hopefully this book will help to build such an environment.

NOTES AND REFERENCES

[1] D. Anderson, The uncertain future in tertiary education. *NSWIER Bulletin* 1975, 11-16.
[2] Headmaster's address, Sydney Church of England Grammar School, 7 December 1978.
[3] References for addresses to the Institute can be found in the *NSWIER Bulletin* for the relevant year.

1

An Administrator States The Case For Research

R. E. Parry

The first thing to be said on this subject is that the methodology of policy making is passing through a time of very considerable change. By contrast with the scene until comparatively recently, wherein educational administrations tended to be monolithic and when policy decisions tended to be taken largely by the authority figure at the top, the present trend is unmistakably towards the democratization of the policy-making process.

This trend is not so new in the tertiary area. The classic system for policy evolution in universities and self-governing institutions like them has been to appoint a select and expert committee to examine and report on a policy problem, to process the report through a complex of internal committees, and to have the final decision taken by the governing council which was a broadly representative body. This was at least how things were supposed to work. I am cynical enough to say there was still ample room for the exercise of divine omniscience on the part of any autocrats who happened to be at or near to the top.

Be that as it may, the movement towards corporate policy making in education generally is proceeding apace, and in New South Wales examples of this are to be seen in two contemporary developments. The interim report of the review of the public service carried out by Professor Peter Wilenski has made proposals for the introduction of what is commonly referred to as 'worker participation' and, even though the developments might be slow, it seems clear that the movement in the State bureaucracies (including those which administer education) will be towards the involvement of more and more members of staff in the committees which have some input into the final and important policy decisions.

A second significant development, which will perhaps be of more immediate interest to this Institute is the publication of the *Final Report of the Working Party on the Establishment of an Education Commission* in New South Wales. This report has proposed an 11-member commission of whom three members will be elected representatives of teachers in primary and secondary schools and technical and further education colleges. The Commission would also include representation from the parental community and, if implemented, would have quite significant implications for the way in which future planning and policy formulation in education in New South Wales were carried out.

The point that I wish to draw out of this is that we can expect it to become somewhat harder to get access to information which does not come forward with at least some stamp of vested interest, if not bias or prejudice, attached to it. As pluralism becomes more established in educational administration, so too will the weakness of the flesh result in the preparation of so-called research evidence which, with the best will in the world, will have been collected with the deliberate expectation that it would support a predetermined point of view.

In these circumstances, I see a greater need than ever before for the development of educational research facilities which have both real and apparent independence and objectivity. Perhaps the ideal sequence of events in policy formation, in whatever sector of education, would run somewhat like this:

First, the definition of the question. So easy to say — but often so hard to do. How often do we hear the statement, 'We must establish a policy on so-and-so. Let us commission some research on which to base the policy'. This is the type of situation which has led so often to an expensive research report into which the unfortunate workers have poured blood and tears, which is set aside and not acted upon because 'it was not the sort of thing we really expected'. Anyone who commissions research has an obligation to set out as sharply as possible the questions to be answered.

Assuming that the questions have been so defined, preferably in the form of the alternative courses of action among which the choice is to be made, it becomes comparatively easy to determine the kind of research that needs to be carried out and who should do it. Ideally, the work should be done by people who have no association with or commitment to the body that has to make the final policy decision. The research report, once finalized, should go to a different group

of people — these days rather grandly called 'policy analysts' — whose task it is to draw out policy implications from the research findings and prepare recommendations for the consideration of the decision-making body. To confuse the research and policy analysis roles is, I think, to undermine the value of research generally and thus it is that I enter my plea for the maintenance of the integrity of the researcher who should, as far as is humanly possible, present his findings clinically and value free.

Probably more often than not there is no time for the leisurely pursuit of this ideal sequence, and decision-making bodies must approach their task on the basis of such background data as they can gather together quickly. This brings into focus the role of the indigenous educational research unit. No worthwhile administration can afford to be without one, especially in the light of the complexities that have developed in recent times in the relationships between the multiplicity of authorities that exist in education. But the unfortunate and beleaguered educational research unit is inevitably in a difficult situation. It has little hope of being left alone to carry through investigations of a comprehensive and long-term kind. The day-to-day pressures on such a unit commonly force it to become the work-horse of the administration preparing, often under hour-to-hour deadlines, analyses and commentaries on the *ad hoc* issues that flow in daily. Too often these units also become centres for the drafting of reports and submissions, for the obvious reason that they contain personnel with a high level of skills in such work. If we are to use research units in that way, we should not be surprised that they are not able to take the visionary overview which, in the long run, is essential to good educational policy making.

Obviously this is where independent research institutes and research centres in tertiary institutions have their main role. The problem is that, if workers in such agencies set their own research priorities according to their personal predilections, then they may not find their produce attracting the attention of the policy makers, whose problems are immediate and specific. It is with this difficulty in mind that I have begun, in recent months, to think more deliberately about the desirability of a body which was first suggested during a visit by some senior North American educational administrators just over a year ago. The visitors pointed out that Australia seemed to lack any kind of independent national agency which could take a visionary look at where Australia was heading in education, say 25 years hence. I must agree. We have many boards and commis-

sions but they operate as agencies of the governments that established them and, quite properly, they work within policy guidelines determined by those governments.

I feel that the time may be right for Australia to bring together a small group of carefully selected and very able men and women whose collective standing and expertise would enable them to publish analytical material that would have great significance for the thinking and planning of all who work somewhere in the complex framework of educational administration. I would see a body established with the approval of the Federal Government but not responsible to it — in other words, a body with complete independence and able to speak its mind freely in the light of its assessment of trends. If such a body were to emerge, then it would generate a major need for research data and I could imagine this body commissioning numerous research studies, not only in education itself but in economics, manpower, and social questions. I would not see the body as having its own research staff at all. It may well have some policy analysts, but it would put out its research to existing specialized agencies.

Another need which I have felt increasingly is for the publication of material which consolidates the findings of those who have been working in some important field of fundamental educational research. I know that abstracts are published, but these do little for the senior administrator unless they are accompanied by an analysis which attempts to interconnect the work going on in various quarters and draw out the implications of the various research thrusts.

The fact that we have not been getting things right in terms of our research base to support policy making in tertiary education is well exemplified by events in a couple of notorious areas in recent years. It is a black mark against all of us that we allowed the problem of oversupply of trained teachers overtake us with the suddenness that it did. Administrators were so busy getting on with the exciting work of expanding their systems that they paid little heed to the message concealed in the accumulating data. How useful it would have been to have some independent researcher, three or four years ago, taking stock of the projections and publishing material that might have had the effect of tugging the policy makers by the coat tail.

Similarly, if we look at the situation in technological education, we allowed the position to develop where the dogs are now barking that we have too many tertiary institutions producing technologists, and that employment trends will continue to be unfavourable for the excessive supply of graduates. Educational policy makers are now

gathering the courage to proceed with the closing of some faculties. However, there does not seem to have been any comprehensive appraisal of the long-term outlook, an appraisal which might have been expected to examine curriculum trends in schools, relate these to the numbers of school leavers in the future likely to be qualified for and interested in technological education, and measure the result against the economic and political forecasts regarding the recovery of national growth.

Educational bureaucracies do their best work when they are producing forward-planning material. Regrettably they tend to concern themselves more with the issues of the day. (Often they have little choice if there are pressing political considerations inherent in these issues.) It is with this in mind that we in the New South Wales Higher Education Board have been trying, in a rather modest way, to prepare a sort of rolling five-year plan of new educational developments within the colleges of advanced education sector in the State. The work is shot through with doubt and guess work, but it is a start. It goes without saying that work of this kind will only improve in quality if it is supported by the kind of research data of which I have been speaking, namely that which attempts to crystal-ball gaze into the future and synthesize from all the variables an intelligent estimate of the circumstances in which the graduates of educational institutions will be emerging.

One specific area of policy making in which we have been singularly tardy in New South Wales relates to the question of the optimum structure of preservice degree courses for teachers in training. Any contribution which objective researchers can make to the unravelling of this massive problem will be warmly appreciated by my colleagues and myself. Should courses be of three or four years' duration? Should they be sandwich courses? Should they involve internship in schools? To what extent is the problem entangled with the idea of continued professional upgrading throughout a whole teaching career? And so on and so on. Here is a beautiful example of the difficulties which come with corporate policy making. People without a declared position or vested interest in this question are rare to the point of extinction, and a clinical treatment of the available data would fall like manna from heaven.

Another deprived research area, so far as policy agencies like mine are concerned (and I judge that the Tertiary Education Commission is similarly placed) is the area of age cohort studies. While we know a good deal about the retention power of the secondary

schools, we have only the haziest notion of the path followed by those who leave school at minimum school leaving age. In view of the dramatic changes facing us socially as a result of permanently structured youth unemployment and the possibility of declining participation rates in higher education, there can hardly be any more pressing need than to know what are the trends in the various categories of educational clientele.

I also feel that there is a need for more work on the real per capita costs of conducting various kinds of educational courses. Such work as has been carried out, has tended to be very esoteric and beyond the comprehension of such slow-witted administrators as myself.

I note that one of the questions which often bedevils research workers is whether they best fulfil their destiny by pursuing research for its own sake according to the dictates of their own intellectual motivations and interests, or whether it is their responsibility to research out those areas thought to be necessary for the solution of society's immediate problems. It is obvious that one in my position will have little option but to say that the need for the latter approach is overwhelming, and so the theme that I must adopt is that there does need to be the closest possible dialogue between the researchers and the policy makers so that the former are able to develop an appreciation of the areas where work can be most usefully carried out.

There must always be room for the entrepreneur and I should not want to suggest that, in the universities particularly, the only research work undertaken should be of an immediately applied nature. The fact has to be faced, I think, that the opportunity to research at personal will is a luxury and, like all luxuries, is likely to be enjoyed by a comparative few.

Finally may I comment on the perennial question of dissemination of research results? I know this is a heart-breaking problem for research workers. They produce and distribute their reports only to be left with the depressing feeling that they have not been read by the significant decision makers. The latter will never live long enough to read all the material that is relevant and of interest to them in educational planning. It has struck me this year that, although I have attended many educational conferences, few of the papers have been vehicles for publicizing research findings. Perhaps I go to the wrong conferences — the ones where others of my own kind depend on their capacity to make outrageous overgeneralizations on some qualitative (and often political) aspect of

education to attract an audience. It seems to me that, since senior administrators perforce attend a lot of symposia, they may well give attention to an address summarizing some research findings whereas they will never find time otherwise to read the published report. I wonder if more can be done to exploit this avenue of information sharing?

2

The Research Contribution to Policy: A Researcher's Overview

S. S. Dunn

INTRODUCTION

A distinguished committee of ten chaired by Roald Campbell, former Dean of the Graduate School of Education, University of Chicago, recently reviewed the operation of the National Institute of Education and wrote as follows:

> Looking at the economically well-developed countries of the world, one finds precious little successful applied education R & D. There are some centers in Sweden, the United Kingdom, Germany, Israel, and a few other places where disciplined inquiries about education by social and behavioural scientists are providing the basis for changes in educational policies and programs. But the general picture is one in which expectations exceed performance, and measurable improvements in te learning and behaviour of students are difficult to demonstrate.
>
> In the less-developed countries educational research and development has even further limitations. The supply of trained social and behavioural scientists available to work on R & D is so limited that the first task in many countries is to prepare capable people. Work now under way tends to focus upon the evaluation of a few experimental projects or upon accurately describing some of the problems that exist prior to attempting their solution.
>
> Seen in this perspective the United States has a rather large and sophisticated commitment to educational research and development. Indeed, many nations of the world look to us for guidance and stimulation in the field. Yet if this is true, why do we find ourselves discontented or even disenchanted with the results of what we are about? The answer to this query is not simple, but it must certainly include the following: (1) Social science research generally is only slowly developing the sophistication that allows it the luxury of predictable results; (2) The problems of bringing about and measuring changes in human learning and behaviour are vastly more complex than those of technological change and are cut across by difficulties of cultural tradition, linguistic style, and emotional factors that simply do not exist to the same degree when one is dealing with things rather than people; and (3) The need for improvement in the results of education is so clear and so great that

all interested parties (legislators, educational policy makers, teachers and parents) develop an initial enthusiasm for education R & D only to have its halting and limited results seem at the least unsatisfactory and at worst inexcusable.

Against this backg[illegible]and it is well to ask whether investments in this difficult field are worth the money. The only possible reply is that we must keep plugging away at the difficult problems of learning and teaching and that doing so by orderly scientific inquiry is almost certainly better than by hunch. More is known today because of educational research about how to motivate children, about how to develop and try out methods and materials, and about how to measure outcomes. That we do not have the final answers in any of these realms is not a valid reason for abandoning the effort.[1]

In view of these comments, any expectations about the contribution of research and development to educational policy in Australia should be modest.

GROWTH OF RESEARCH AND DEVELOPMENT IN EDUCATION IN AUSTRALIA

This is not a scholarly historical study but rather an attempt to highlight some of the developments in research and development in Australia.

The Australian Council for Educational Research (ACER) began in 1930 with grants from the Carnegie Corporation. It is now an internationally recognized body receiving grants-in-aid from the Commonwealth and State Governments, able to undertake contract studies, and with a sizeable income from the sale of tests and materials. Many of its studies have had an impact on policy and a new section has been created in the area of social foundations of education to foster studies with policy implications. The State institutes of educational research linked to ACER have also, particularly in some States, had an influence perhaps mainly through dissemination.

State education departments have all developed research units which have had some impact on policy. Whereas initially such units tended to be linked with guidance, they have over time tended to become linked more closely with either curriculum or planning. From personal observation I believe several research sections have had an important impact on the policy of their State. In New South Wales it is perhaps of interest to note that two recent Directors-General, Wyndham and Verco, were each at one point in their careers head of the research section. The creation of the South Australian Council for Educational Planning and Research represents a most interesting recent development. It is too soon (less than

three years) to attempt to evaluate the work of the Council and its impact on State policies.[2] The Anderson Committee of Enquiry into Post Secondary Education was asked to make comments on its role. At the State level there has been some growth in the research staff of teachers unions and in some of the Catholic Offices of Education. The Education Research and Development Committee (ERDC) recently funded a union research officer for an Advanced Research Training Fellowship.

Any major role for the Commonwealth in educational research and development is a post-war phenomenon. The Commonwealth Office of Education founded in November 1945 had a research section, and some distinguished researchers participated in its work (Robertson, Weeden, Pratt, Philp, Neal, McCusker, Anderson, to name a few) and undoubtedly some of its work has influenced Commonwealth policies. The Office has now become the Commonwealth Department of Education with a research section which has not, however, grown into a sizable body with major influence on policy.

The ERDC (or Australian Advisory Committee for Research and Development in Education as it was originally called) was created by the Liberal-Country Party Government some seven years ago to advise the Minister for Education on research and development in education. I will return to its contributions later in the paper. It has enjoyed a modest expansion except for a budget cut in 1977-78 which reflects its vulnerability.

The Tertiary Education Commission (TEC) and its three Councils resulted from a combination of the three existing Commissions, the Universities Commission (UC), the Commission of Advanced Education (CAE) and the Tertiary and Further Education Commission (TAFEC). Policies of the UC had been shaped by data it gathered but it did not commission research and development studies such as those funded by the CAE and TAFEC. It is fair to say that the CAE was disappointed in the contribution of the studies it funded to policy development partly, I believe, because it did not establish appropriate machinery to guide such studies. Within a few days of delivering this talk I will be discussing a working paper with the four full-time Commissioners of the Tertiary Education Commission on the national research and development needs of the tertiary sector and how they might be met.[3] The Curriculum Development Centre (CDC) represents a major effort by the Commonwealth and the States to meet the research and development needs of the country

for curriculum development. It is too soon to judge its impact on policy despite the reaction of the Queensland Government to the Social Education Materials Project. Close links have been developed between ERDC and CDC resulting in projects of mutual interest and one joint study in curriculum evaluation. The Schools Commission has used evaluation studies and investigations to guide many of its policies, e.g. libraries, in-service education. The data base on which policy decisions have been made has been developed substantially by the Commissions. Probably the need to justify their recommendations has led to more reliance on research studies.

In any overall picture of research and development growth in Australia, we must note the major growth in staffing of faculties (or departments) of education in universities. A good index is the growth in the number of professors of education — I think there are now about 50 positions compared with less than a dozen a few years ago. The staff of colleges of advanced education responsible for education courses have also increased markedly in research and development competence. An examination of the number of Ph.D. and thesis Masters degrees is another index of this growth.

Two national professional bodies are worth mentioning. The growth of the Australian Association for Research in Education (AARE) reflects the development of a pool of researchers and its influence will become more widely felt. The Australian College of Education is a more general body, but it has carried out some valuable studies both nationally and through its State chapters.[4] Its study of community opinion, jointly funded with ERDC, could influence policy decisions.

We should not overlook committees of inquiry at both State and national levels. They frequently commission research and use it as a base for their recommendations. The Karmel Committeee in South Australia 1969-70 established a more detailed model which later committees seem to be following. The time constraints, staff, and funds available are often limiting factors in the research base for reports.

In summary, the nearly fifty years since ACER was established have seen a significant increase in research and development activities in Australia and greater use of research and development for policy development. However, as will be shown later, major policy changes tend to occur without a background of extensive research and development effort.

SOME MAJOR POLICY CHANGES

I intend to examine a few major policy changes of recent times for the purpose of seeing (a) who were the decision makers, (b) whether research and development contributed, (c) whether research and development could have contributed.

Some of these policies originated at the level of government.

State aid This is essentially a political value judgment and research and development can add little other than public opinion data and desirably some monitoring of its effects.

Science laboratories and libraries A study of policies in these areas will show resistance to research and development, followed by a post evaluation (science) and some formative evaluation (primary libraries). There is little doubt that formative evaluation could have saved large sums of money.

Commonwealth Secondary Scholarship Examinations (CSSE) Post-evaluation studies undoubtedly affected decisions to disband the CSSE, but not the decision to commence it. This is a good example of how political values, perhaps of one man, can decide policy.

Public Examinations Changes in public examination policies perhaps reflect advice guided by research studies, although interpretation of the data is often influenced by pressure groups, e.g. teachers unions.

Education Commission In New South Wales one may ask what research and development base lies behind the idea of the Education Commission.

Some major changes particularly relating to curriculum and organization are initiated at the departmental level, although usually with government consent.

The decision to build *open-classroom schools* is being seriously researched long after policy decisions have been taken, rather than as a research and development operation in its own right.

We are also seeing a major shift to *school-based curriculum development* without, I believe, an adequate understanding of its problems based on a research and development approach.

The *new maths* came in with enthusiasm but is now subject to much criticism.

The decision in some places (Victoria and Schools Commission) to evaluate *in-service education programs* should be commended although a more thoughtful prior analysis of issues would have been beneficial.

At the individual school level we have the development of alternative schools and innovations programs. Innovators are seldom researchers, and our best hope for research and development studies probably lies in case studies by academics and students studying for higher degrees.

At the level of public inquiries, which usually result in some policy decisions, there is a growing practice of involving researchers, e.g. Committee of Inquiry into Education and Training, Committee on Specific Learning Difficulties, Committee of Enquiry into Post Secondary Education.

PROBLEMS OF PROVIDING A RESEARCH AND DEVELOPMENT BASE FOR POLICY DECISIONS

Despite the growth of research and development in Australia, the previous section has, I believe, shown that the major educational policy decisions are only marginally influenced by research and development. Very often the decision is made and selective research data are used to legitimize the decision. Alternatively evaluations are carried out with the data selectively gathered to justify the policy.

We must first recognize that research and development projects cannot provide answers to value questions, and educational policies are often basically value decisions. Research can in a democracy provide data on public opinion and can provide information on which the public can develop informed opinions. Research in the politics and political economy of education is an underdeveloped field in Australia.

In Australia we do not have a public well-informed about educational alternatives, although with community involvement it is probably growing. It is an activity I had hoped the South Australian Council for Educational Planning and Research could foster.

With policy research, time and timing constitute a major problem. Academic researchers are often loath to work against time constraints, but a research report that is produced after the decision date is of little use. Also major research may take three to five years to complete and it is difficult to predict what the policy issues will be so far ahead. An ERDC report on teacher morale concerned with why teachers were leaving the service was completed and published just when the resignation rates dropped dramatically and the surplus of teachers became evident.

We are becoming increasingly aware of the problems of generalizability from educational research. Yet policies by their nature tend to be decisions which will be generalized across a state or country.

In the research and development operation we face a number of problems.

1 *Quality v. quantity* Here I think we have done better than the United States. Our output may not be exciting but we have not had the publishing mania for indifferent research and development which did much to discredit educational research in public opinion.

2 *How far should research and development be guided from above and how much should it be initiated from below?* The Australian operation has tried to steer a balance as I will attempt to show later.

3 *Communication* Research and development activity in Australia has a poor record. In particular few education departments publish adequately. Queensland has been one of the best. South Australia is now showing up and even identifying the individual researcher.

4 *Funds* At both Commonwealth and State levels, funds are relatively limited compared with the sums expended in the United States. We never seem to have the funds to plan a really major study such as a longitudinal one. Would that we could have a small percentage of the educational budget marked for research and development activities.

WHAT IS ERDC TRYING TO DO TO IMPROVE RESEARCH AND DEVELOPMENT IN AUSTRALIA?

Establishing Priorities

After a limited canvassing of major decision makers, ERDC members, who are themselves widely based, decided on four priority areas and established a Priority Area Advisory Group (PAAG) in each area to develop priority projects which were sequential and related. Their working documents have been circulated widely to provide feedback and to locate individuals or groups interested to undertake research and development.

Applicant Initiated and Commissioned Studies

ERDC is trying to maintain a balance between these two activities. I believe conclusion-oriented studies are best when initiated by the researcher. Decision-oriented studies can arise from either source. ERDC is in a position to foster policy studies and is taking steps to

think ahead so as to take account of the time lag in research and development.

Training of Research and Development Workers

You are probably aware of ERDC's fellowship programs for training research and development workers. We have initial Research Training Fellowship and Advanced Research Training Fellowship Schemes. Some present tonight have probably been recipients of one of these. We have also worked closely with the AARE and will shortly be discussing ideas with the AARE Executive. We have also used research conferences for training, dissemination, and project development. We are currently attempting an internal evaluation of our training programs.

Dissemination

We are struggling with this problem. We have encouraged publication or have published reports through the Australian Government Publishing Service. We have organized seminars, often bringing together researchers and decision makers.

We have published popular versions of reports and we are contemplating digests for wider circulation. Lack of staff is a handicap. We have found circulation of draft reports useful especially where they are policy studies.

Co-ordination

ERDC is charged with co-ordination of research within the portfolio. To date it is largely achieved by personal contacts. The discussion with the Tertiary Education Commission mentioned earlier could lead to new developments following clarification of needs and responsibilities. There is a need for better co-ordination between departmental research branches, ACER, and ERDC, which I hope can be achieved in 1978-79. We also maintain communication with other bodies such as the Australian Research Grants Committee, the Hospital and Health Services Commission, and the Department of Aboriginal Affairs.

In summary, research and development in Australia has shown substantial growth. It has already made some contribution to policy issues and it can make a greater contribution, although we must recognize its limitations since policies imply value decisions. If we wish to achieve this more important role, we must build upon firm foundations. We need to gather our fair share of able researchers who understand policy research and its difficulties. A steady growth based on success is to be preferred to spectacular growth with a high percentage of failures.

NOTES AND REFERENCES

[1] United States National Institute of Education, *R & D Funding Policies of the National Institute of Education: Review and Recommendations*. Washington, DC: 1975, 65-66.

[2] The South Australian Council for Educational Planning and Research was closed on 30 June 1979, but the Act has not yet been repealed.

[3] The Tertiary Education Commission has created an Evaluative Study Steering Committee with funds for the triennium.

[4] The Australian College of Education has in 1979 established a Committee on Research Activity in Education.

3

A Political Perspective on Research and Education[1]

Senator the Hon. J. L. Carrick, Minister for Education

A decade of development in educational research

It is always salutary in any field of endeavour to examine the progress made over time. Many of you will be in a better position than I to comment on the progress made in the field of educational research. You will be heartened by much that has happened, and no doubt there will be many disappointments. It may be an interesting piece of educational research to examine the positive and negative reactions, and reasons for these, that people like you have about your own field of interest. Obviously you are committed to it, and I would encourage you all in your endeavours. In particular, I would encourage you tonight to consider how your concern in education (as researchers) can best relate to mine (as a politician). I think it is true to say that we need each other.

I would like to pay tribute at this stage to a great Australian educational researcher, whose memory is, I'm sure, still poignant for many of you. I am thinking of Dr W. C. Radford. I want to recall some words of his which he spoke a little over a decade ago. At a conference which he convened, he expressed his concern about educational research with the following words:

> In any particular topic touched on in education, we find that when it is pursued we have often little evidence to justify our present practices, other than experience, and little to help us predict the outcomes when we want to change practices.
>
> Although there will be many current and future problems in the immediate solution of which research may play no part, and although there are many others on which only long-term research will help to reach better solutions, there are still many problems in which both existing research findings and feasible short-term research could help in making a decision about the most desirable action (or inaction).[2]

The problems that Dr Radford recognized in 1967 are still with us, and I would like you later to elaborate on what you see as the way forward for relating research to practice, from our present vantage point in 1978.

Dr Radford went on to point up the need for additional trained researchers, for improved dissemination of a greater amount of research and for the presentation of research information to decision makers.

Much that has happened in the last decade in the field of educational research in Australia reflects the foresight of Dr Radford and was facilitated by his personal contribution.

His statements have had fulfilment in the establishment of the Australian Association for Research in Education and later the Education Research and Development Committee (ERDC) which, I think you will agree, is providing a very significant stimulus to the evolution of educational research in Australia.

A decade ago the State education departments and the Australian Council for Educational Research were probably the only significant contributors in the field of policy-related research. I am not, of course, as familiar with developments in the States as in the Commonwealth Government; but you will be aware of the significant contributions being made by other bodies apart from ERDC to educational research — in particular the Schools Commission with its action-oriented research programs and the Curriculum Development Centre with its research in the vital area of curriculum development and evaluation.

While discussing developments in the past, you will be interested in some preliminary figures which the Department of Education has recently extracted from an analysis of the Department of Science Project Score data. The figures extracted make comparisons between 1968/69 and 1973/74 expenditure on educational research. Although there are many inconsistencies to be considered when making such a comparison, not the least of which is the inflation rate, Project Score data give the only comprehensive data on research and development expenditure in Australia.

Taking these considerations into account, the data show that between 1968/69 and 1973/74 expenditure on education research and development increased at more than twice the rate of increase in expenditure of both natural and social science research and development as a whole (excluding humanities). Even so, expenditure on education research and development in 1973/74 accounted for

less than one per cent of total research and development expenditure and less than 15 per cent of expenditure on social science research and development as a whole.

Consistent with the increases in expenditure, manpower devoted to education research and development increased at more than twice the rate of manpower increases in both natural and social sciences as a whole.

These figures give some objective information on the increases that you will be aware of from your own observation. The question that is of concern to us is whether the increase in expenditure and manpower has been paralleled by a commensurate increase in the value of the output.

THE PRESENT SCENE

I realize that the term educational research is hard to define, and we should not overlook the contribution of the attempts made in the area by teachers who are comparatively untrained in the field. However some indication of the number of trained researchers in Australia in 1977 can be gained from institutional nominations of staff who were considered to be significantly involved in educational research. These nominations were given for the production of the *Directory of Educational Research and Researchers* which was published by the Department of Education last year. Eighty-eight institutions provided names of researchers and the Directory contains the names of 649 researchers. There are many other researchers who, for one reason or another, did not have their names included in the Directory, and it is expected that a future edition will be more complete.

I referred earlier to the increase in funds available for educational research. The developments of Commonwealth agencies which fund a high proportion of the total research expenditure were very desirable developments. However there are two important elements which these agencies face. Firstly the economic climate is such that they are not likely to have substantial increases in funds available. Secondly, and partly as a consequence of the first, there is a greater sensitivity to the relevance of what is being attempted. Decisions on relevance involve judgments on priority, and such judgments can become very difficult in a time of scarcity of resources and in times of social change.

I can only commend those researchers and research bodies who are struggling with the problem of the political and social priorities of the research being undertaken. In the past there has perhaps been the assumption that any assertion of relevance implied the obligation to act. As researchers, you are part of the decision-making process and you have an obligation to establish your priorities in the light of the resources available.

I will return to this theme later, but first I would like to comment on the related problem of research co-ordination. The ERDC has the role of co-ordinating all educational research as far as the Commonwealth education portfolio is concerned. I think Mr Dunn has already outlined to you some of the steps he has taken. I would like to go further and at least raise the question of co-ordination on an Australia-wide basis. I am not suggesting that there should be one centralized co-ordinating body, but I am wondering whether there is very much awareness, say here in New South Wales, of some of the activities in other States. There is a danger that we can be more familiar with developments overseas than we are with developments in neighbouring States. I would invite your comment, in later discussion, on your awareness of developments in other States and what problems and benefits there may be in sharing this information more widely. I would suggest that we cannot afford to be duplicating research unnecessarily and that we should take advantage of expertise and experience of other researchers in Australia, where this exists.

I include in my concern the activities of the Commonwealth as well as the States. You may not be aware of some of the activities of the Department of Education and the ACT Schools Authority, as distinct from ERDC, in the area of educational research.

The Schools Authority, with very limited research capacity, has made good use of teachers within the system to further research. I think the approach adopted provides an interesting model in involvement which must therefore be more effective in disseminating findings to teachers in the system.

The Department of Education research staff, who are now within the Education Planning Group, have the role of advising me on research developments and conducting or commissioning research relevant to the needs of the portfolio. Some of the recent survey reports which have been produced include:

Students in Technical and Further Education;
Teaching in Modern Languages in Schools;
Tertiary Student Income and Expenditure;
Higher Degree Students;
ACT Secondary Students Aspirations.

You may be more familiar with commissioned studies such as: Professor Watts's *Evaluation of the ABSEG Scheme;* and Professor Mackay's study, *Educational Turbulence among Australian Servicemen's Children.*

A longitudinal study by Professor Taft on the educational experiences and adjustment of migrant children is about to be published.

There is also an Australian research involvement with the OECD's Centre for Educational Research and Innovation. In this way, as well as contributing, Australia can benefit from overseas expertise. Last year, for example, we took advantage of the presence of two experts in the recurrent education area to hold a significant seminar on this topic which led to the production of the report *Trends, Tensions and Trade-offs.* We are also at present co-ordinating a national paper; with assistance of the States, on *Policies for Basic Education in the Primary Education Sector.*

QUALITY IN EDUCATIONAL RESEARCH

Awareness of research among researchers is only a small part of the general problem of dissemination as I see it, and effective dissemination is a major contributor to the achievement of quality research in Australia. Another major determinant of quality research is its relevance to policy — a theme I touched on before.

I think that these two aspects — effective dissemination and relevance to policy — are two of the strategies that we are beginning to concentrate on. Certainly there has been disillusion with the outcome of educational research expenditure in the United States. Expectations were high and the temptation for researchers to take advantage of the faith in their art was perhaps too high.

Relevance of Research to Policy

In supporting the need for relevance in educational research, I would stress the need for individual research projects of merit across the whole educational spectrum. I would not want to discourage conclusion-oriented research or pure research, at the expense of decision-oriented or applied research.

Perhaps, as Professor Taylor[3] has said, there is no such thing as pure research in education because education, being a practical activity, means that all true educational research is applied. What starts out to be a piece of fundamental research can, because of the importance of the subject matter or the striking nature of the findings, soon have considerable policy implications. But I am mindful of the relatively limited number of valid conclusions that have been produced by educational research which are of real relevance to policy.

One educational researcher, Gene Glass, was perhaps overstating the case when he said that 'there is probably far more knowledge (about how to manage and promote learning in the classroom) in the nervous systems of ten excellent teachers than an average teacher can distill from all the educational research journals in existence'.[4]

Perhaps this is a plea for a change of emphasis in the method of educational research. Whatever the method, policy research needs to concentrate on factors which make a difference and are susceptible to change. The ERDC has established Priority Area Advisory Groups in an attempt to map the needs in each of these areas and to scan the horizon to anticipate the emerging needs. I am hopeful that this approach will provide relevant information in time for some of the major decisions which Australia will be facing in the near future. The priority areas of multicultural education, the impact of social and demographic factors on education, recurrent education, and 'what is happening in the classroom' are indeed relevant areas to focus on.

Another alternative open to researchers, in attempting to provide findings which are valuable for the policy maker, is to seek policy-relevant findings from the mass of educational research and to derive broadly-based conclusions as to what we know about educational effectiveness. This approach was, as you may know, used in the Rand Educational Policy Study entitled *How Effective is Schooling?* The book provides the function of the broker between the scholar researcher and the decision maker. The same sort of approach has been proposed by Glass with his meta-analysis of research. He uses it to refer to the statistical analysis of a large collection of results from studies with the purpose of integrating findings. From the perspective of the policy maker, there is some sense in pulling together what the research is saying in various educational topics and consolidating for the purpose both of guiding the practice of education and of

steering decisions on the direction of future research.

Again I would invite you to react to this proposal that there is a function between the researcher and the policy maker — a research broker — who could enable research to play a more meaningful role. Also I would invite you to consider how your Institute could, or indeed whether it should, become involved in the application of research findings to current issues.

Another aspect of involvement of researchers in policy decisions is that if findings are relevant to a particular issue, particularly if that issue is controversial, those findings will be used and in all likelihood misused by those who are wanting evidence to support a particular point of view. You are as much aware as I am that research findings are rarely a decisive influence in a political decision, but they should at least be part of the decision-making process where information is available. It is a responsibility of the researcher to ensure, as far as possible, that the findings are accurately interpreted. Perhaps there is a need for researchers to be honest to the point of deflating any false confidence that the policy makers may want to have in their research findings.

There was, I think, a lot of truth in my earlier quote from Gene Glass. Education is an art, as well as a science. The sophisticated scientific research can well be supplemented by the sensitive and insightful case study or historical analysis. I would like to think that decisions in education could be guided by the insights of the experienced practitioner, as well as the ostensibly more objective statistical analysis of the experimental approach.

Effective Dissemination

I stated a little earlier that research information should be part of the decision-making process. I am not thinking of the provision of information only at the apex of the decision-making process where the final decision is made. Education research findings should reach a high proportion of practitioners who should ideally be alert to inform the community at large. Only then will findings penetrate to the social context in which decisions are made. The popular press features argument and assertion about education which is poorly based on evidence.

The answer to the problem of dissemination of research findings is as complex as the problem of education itself. I think the quality of the teachers is basic to the education process and I would see the training of teachers to be research oriented — being aware of the

research method and willing to implement findings — as a necessary precondition to effective dissemination. It is worth considering this point in the context of the teacher education inquiry which is about to commence its task.

I am sure you have other points to bring forward as improving the dissemination process. Two others that come to mind are first, the need for research to be 'translated' into non-technical language and summarized for use by practitioners and administrators; and second, the need for an adequate clearing-house of research information including all research carried out in Australia of a satisfactory standard.

Our mutual concern is that the funds spent on educational research are well spent. Society has legitimate claims on how we decide to spend the research dollar. Society is well served by studies such as the *Australian Studies in School Performance* which contributed effectively to the literacy and numeracy debate. It stimulated educators and the community in general to clarify their thinking on a basic educational issue. Even if there is not a unified point of view, at least the debate can proceed on a more informed basis because of the research which was carried out.

THE FUTURE

The Government's education policy supports the importance of:

> evaluating the effectiveness of educational expenditure; and
> encouraging research, innovation, and experimentation.

It is researchers such as yourselves who are involved in the achievement of this policy. I think I have indicated tonight that you have a vital role in the decision-making process. The effectiveness of that role will depend on both the quality of research and the way it is brought to focus upon educational issues.

I would close by encouraging you to develop closer links with policy makers so that political decision makers and the community at large can shape more viable policies to deal with the great diversity of challenges which confront us in education.

NOTES AND REFERENCES

[1] This address was delivered by Mr B. Morey, Education Planning Group, Commonwealth Department of Education.

[2] W. C. Radford, A final statement, In Australian Council for Educational Research, *Research into Education: Improving Its Value to the Practice of Education.* Hawthorn, Vic.: 1967, 142.

[3] W. Taylor, Knowledge and research, In W. Taylor (Ed.), *Research Perspectives in Education.* London: Routledge & Kegan Paul, 1973, 191-210.

[4] G. V. Glass, The wisdom of scientific enquiry on education. *Journal of Research in Science Teaching,* 1972, 9, 11.

43

4

Policy Decisions and Research Inputs

B. R. Williams

There were more than 600 submissions to the Committee of Inquiry into Education and Training. Some of them are very large and many showed that Government departments and organizations, institutions, and persons had used the occasion for a review of the system or of their own activities.

The main concern of the Inquiry was post-secondary education, but half of the submissions related to schools generally and concentrated on two issues:

1 literacy and numeracy, about which there appeared to be a dominant view that standards had fallen; and
2 methods of teaching, which many submissions (particularly from the business sector) alleged were producing children incapable of concentrating or doing a decent day's work.

It is impossible to say how standards of literacy and numeracy have changed over time. The only available information that makes possible time comparisons is in Queensland, though it is doubtful even there that the tests since 1933 are quite comparable. We did not commission surveys of literacy and numeracy. The Australian Council for Educational Research (ACER) survey was sufficient for our purpose. The ACER and other investigations show that a significant proportion of school leavers have not reached anything like adequate levels of literacy and numeracy.

The Committee considered whether the criticisms received from industry were typical; and also whether the widespread allegations of a decline in levels of literacy and numeracy might reflect changes in technology and the nature of employment more than changes in learning.

We asked Dr Hughes and Dr Collins of Canberra College of Advanced Education to conduct a survey of the views of students,

teachers, and parents on the goals and performance of secondary schools. Their survey revealed a notable similarity in the judgments made by teachers, parents, and students in the ACT, Victoria, and New South Wales, to the effect that schools were doing reasonably well in teaching the traditional basics, conformity and perseverance; not so well in teaching clear and effective speaking, knowledge and skills relevant to finding and holding jobs, and the knowledge and skills which lead to personal autonomy.

The survey of public opinion conducted for the Queensland Chapter of the Australian College of Education revealed similar responses. But employers, apprenticeship authorities, and the technical and further education (TAFE) staff made strong complaints about their recruits from the schools; and it would be foolish to ignore them.

There were several submissions which maintained that the number of unskilled jobs that did not require literate and numerate workers had fallen and that therefore the skills required for performance had risen. School retention rates in Australia are much lower than in the United States of America, Canada, and Japan, which suggests the need to ask whether we should be placing emphasis upon increased retention rates in schools.

The increase in retention rates has created new and difficult problems for the schools. Submissions from several schools indicated something approaching a crisis in confidence. Were schools mere minding centres for many pupils? Have school curricula become ill adapted to both the academic and non-academic streams? Was the post-war emphasis on general education for all students a great historical mistake? Should there be more vocational education in addition to the traditional academically vocational within the same schools, as proposed by the Tasmanian Education: Next Decade (TEND) Committee in Tasmania, or in different schools? Or should TAFE be left to cope with the drop-outs? Neither members of our committee nor those who made submissions are of one mind on these issues. The interest, or revival of interest, in these issues in recent years calls for much further inquiry and debate to sort out the facts and to sort the ends from the means.

The Terms of Reference of the Inquiry require comment on special groups: the handicapped, Aborigines, and women. The most difficult of these areas is that of the Aborigines, though their number, some 120 000 to 150 000, is relatively small. I doubt whether we are near an understanding of the Aboriginal problem.

The difference between pupils in high schools in the Northern Territory and in New Guinea is dramatic. In New Guinea there are clear signs of energy and ambition, but not in Aboriginal high schools I visited in Darwin. Perhaps the context of teaching is not right. Would something like agricultural schools or trade schools serve them better at this stage? When I was in Darwin, I raised the question of agricultural schools; but the response was that the Aborigines had no tradition of agriculture, which did not seem to be an adequate response. A recent decision to create some cadetships in forestry for them is promising. There is an enormous field for further inquiry and research and experiment relevant to the many different problems of Aboriginal children — in their home lands, in or near country towns, and in the cities.

THE POST-SECONDARY SECTOR

Some of the information needed by the Committee and requiring inquiry or research was conducted by the staff of the Committee. An inquiry was made into attrition rates since the 1951 and 1961 cohort studies in universities. We planned to conduct a study of the 1971 cohort in tertiary education. Lack of teachers college records made it necessary to restrict the study of the 1971 cohort to universities. We had to be content with a study of the 1974 cohort in some colleges of advanced education.

The results were interesting. The university study showed, as in the 1961 study, that there had been a further reduction in attrition rates and a marked increase in the proportion completing their courses in minimum time plus one year. The CAE survey could not be used for time comparisons; but the results were disturbing. Except in the teachers colleges attrition rates were high, consistently through their undergraduate courses. The survey revealed the need for some hard thinking about selection. The standard of statistical returns was appalling. Many were incomplete and internally inconsistent and reflected great discredit on those sending them in. One college decided to withdraw its return on the grounds that the departments in the college complained that they had never had as many students as the central records imputed to them. But if the attrition rates were less than shown because central records were wrong — presumably because first or provisional enrolments were not reviewed — the college must have received funds for students they did not have.

The surveys revealed the need for greater attention to failure rates and to the disappearance of students between first enrolment and end-April, and between end-April and annual examinations.

Staff of the Committee also surveyed examples of manpower planning in Australia and compared forecasts and facts. The results were very chastening — for those who advocated more manpower planning — and will have a powerful influence on the Committee's recommendations. Further surveys by the Committee staff, and a survey of tradesmen conducted for the Committee by the Australian Bureau of Statistics (ABS) revealed that published information on apprentices and tradesmen was incomplete and in many respects misleading. These inquiries and surveys indicated that many pronouncements from the Department of Employment and Industrial Relations and the National Training Council were based on inadequate information, even folklore, with unfortunate consequences for policy. The implications are spelt out in the Report.

The Committee commissioned Dr Beed to survey attitudes to teaching, learning and research in universities, colleges of advanced education (CAEs), and technical further education colleges. There was a postal survey of attitudes of students and staff in these institutions. The Committee also commissioned Dr Fitzgerald to extend his work on early leavers and the transition to employment in Victoria.

One of the main responsibilities of the Committee was to provide a perspective on planning to the year 2000. The Martin Committee had made a projection of numbers in tertiary education until 1975, and of expenditure as a percentage of gross national product. The starting point of projections is the population forecast. This may appear to be simple — isn't it easy to forecast population 20 years on? Well the Borrie Report created a shock, and the latest projections of the ABS for 2001 are ten per cent different from Borrie's. Population is considerably affected by immigration rates and that is affected by the economy.

While it is possible to say with a fair degree of accuracy what the primary school population is going to be for the next few years, the post-secondary numbers are in doubt from next year onwards because retention rates in the post-compulsory years are unstable.

The implication is that the most useful way to provide a perspective on planning is to provide a range of projections. The Committee has worked with a 'family' of projections. The population projections are very sensitive to changes in assumptions about net immigration rates. We have made projections for annual rates between

zero and 50 000. It is necessary also to make projections on the basis of different assumptions about retention rates in schools and participation rates in post-secondary education. In the past these rates have increased with growth in production per head. The higher the rate of economic growth, the more buoyant is the tax revenue and the consequent ability of the Government to finance education.

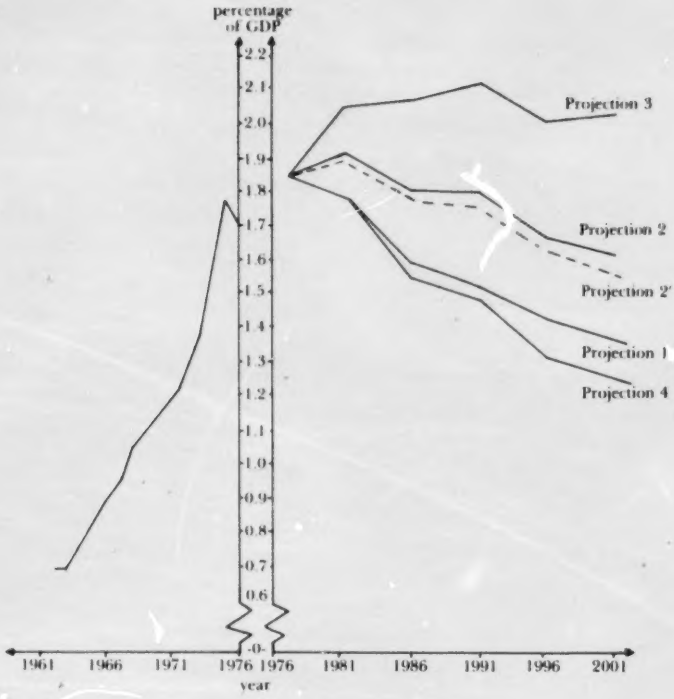
The growth of family real income also affects the willingness of families to keep their children at school or post-secondary education. We assumed that, as in the past, the numbers in post-secondary education will depend on economic growth, and we therefore made projections of the number of students in post-secondary education for assumed rates of economic growth per worker of between zero and three per cent a year. There are therefore many reasonable projections based on various assumptions on immigration, net production rates and rates of economic growth.

To provide a perspective on planning it is necessary to attach costs to the projection of numbers. The first problem here is that prices and costs will change over time. We simplified that problem by expressing costs as a percentage of gross domestic product (GDP) each year. The second problem is that total expenditure is sensitive to the distribution of students between the three post-secondary sectors. From this follows the need for a further set of projections to deal with different assumptions about the sectoral distribution of students.

The graph shows the result of costing four of the many possible projections — all in fact reasonable projections — on the assumption of a two per cent annual increase in output per worker.

The fact that even on very expansionist assumptions the growth in expenditure relative to GDP tails off is both interesting and significant for policy. We are coming into a period where the working population will grow more than the educational population, unlike the Martin period. The fall in expenditure relative to GDP in projection 2 — which is a likely outcome — is due to this mainly and not to a reduction in standards of expenditure. In fact provision is made in the projection for a restoration of 1975 standards. The growth in TAFE colleges relative to CAEs, and in CAEs relative to universities contributes to the fall. These projections required very detailed analytical work and calculations, which are however subject to considerable margins of error.

These projections involve a high level of aggregation. Part of our committee work involved detailed work on topics within sectors.



Projection

1 Constant intake for university and CAE sectors with low growth in TAFE
2 Substantially reflects effects on demographic movements on university and CAE sectors with moderate growth in TAFE
2' Projection 2 excluding additional growth in 'indirect' entrants to CAE.
3 University and CAE projections based on more growth-oriented proposals with high growth in TAFE
4 Projection of school cohort proceeding to university and CAE falling from 1981 with low growth in TAFE

Public Expenditure on Post-secondary Education as a Percentage of GDP: 1962 to 1976; and Projected Expenditure[2] on Post-secondary Education as a Percentage of GDP (2 per cent increase in output per unit of labour force): 1977-2001

Notes

1 The two series are not comparable. The series from 1962 to 1976 is based on public sector final consumption expenditure as published by the Australian Bureau of Statistics. The costings for the projections were based on Government grants to post-secondary education.
2 Cost calculations were based on adjusted 1976 standard of expenditure per student.

One such topic covered was tradesmen and methods of training tradesmen. The Committee was informed that the number of tradesmen was declining, that there had been a fall in the number of apprentices, and that there was a shortage of tradesmen even during the recession. When we examined these and related issues, we found that the amount of reliable information was small. The view that the stock of tradesmen was declining was based on an illegitimate comparison of self-enumerated numbers of tradesmen in the Census with the investigator numbers in the household expenditure surveys. We found too that the alleged decline of the number of apprentices did not tally with numbers in TAFE courses. We discovered in the end that the 'fall' in the number of apprentices was caused by a revision in the basis of the New South Wales statistics, which reduced the statistics by one quarter — from a published figure of 50 600 in 1976 to 37 200 in 1977 and 40 800 in 1978 — without affecting in any way the actual number of apprentices in training. We realized that the labour statistics are very poor, and that the Department of Labour and the ABS often used incompatible definitions. It is scandalous that governments have allowed such a state of affairs to continue.

The absence of reliable statistics impeded our inquiries on trade training, and also on the problems of the disadvantaged. Statistics on the physically disadvantaged who are classified as less than 80 per cent handicapped are very scrappy. The Committee is expected to say something about the relations between the sectors. Few submissions attacked the concept of sectors. There were however submissions from people in the university sector which criticized academic drift in the CAEs, and there were submissions from CAEs to the effect that arrangements for the approval of courses should be the same as in the universities. Many of such submissions were concerned with issues of status — with establishing the concept of 'different but equal' as in the Sweeney report on salaries, rather than the Martin concept of 'different and complementary'.

A more intellectual line of argument was that sectors created problems for outer metropolitan areas and country districts — that the division of labour appropriate in major centres of population is often not appropriate elsewhere. This is a real problem and we are giving much though to the ways and means of solving it. Some CAEs in effect accept contracts from State education departments to give TAFE courses. Some TAFE colleges accept contracts from the Tertiary Education Commission to give advanced education courses.

The Riverina College of Advanced Education and Deakin University have study centres for their external students. Could we extend contracting procedures and a co-ordinated provision of external courses to overcome the problems of access in areas not large enough to justify specialized institutions? The Committee is inclined to think that we could. Could we extend access by combining different modes of study? Could we in these ways provide the Australian equivalent of the North American community colleges at, say, Dubbo and Tamworth?

These are just a few of the issues that are being considered by the Committee. There are many issues which we have not been able to analyse adequately, and we will make a considerable number of recommendations for further research.

5

The Research Contribution to Educational Practice

J. P. Keeves

It is sometimes claimed that educational research, in the main, is trivial and has made little contribution to educational practice. Such claims are based, it would seem, on a failure to understand the nature of educational research and on a failure to understand the manner in which educational research findings influence educational policy and practice. It is the purpose of this paper to consider the nature of educational research, and to illustrate how the findings of educational research might influence educational practice, by discussing some of the findings from a major study.

Much has been written about the nature of educational research, but such writings frequently have an air of unreality about them, because rarely has the writer drawn from research studies in order to exemplify the points being made. Recently the release of the volume edited by Suppes, *Impact of Research on Education: Some Case Studies*, has begun to rectify this shortcoming in the debate on the nature of research in education.[1] Nevertheless, the stereotyped view is still held that the educational research worker, trained in the discipline of psychology, prescribes for pedagogical practice the 'do's' and 'don'ts' which may be derived from the laws and generalizations of psychological theory. The audience for the counsel of the educational research worker and psychologist is seen to be the practising classroom teacher who seeks to improve the effectiveness and efficiency of his daily work.[2] It was perhaps not surprising that such a view should have been advanced at the time when psychology was developing as a science and when schools of education were being created. However, this view has continued to be widely held over a long period and has more recently been extended and elaborated.

In accordance with this view, it has frequently been claimed that research in education can be found in three forms: basic scientific investigation, with its roots in the discipline of psychology; applied research to solve a recognized practical problem; and action research, directed towards the development of new educational materials, methods, and practices.[3] Similar distinctions have been made by Cronbach and Suppes who have classified research into two types: conclusion oriented and decision oriented.[4] However, such a categorization still adheres to the stereotyped view of educational research in which conclusions are established within the context of fundamental psychological research as contrasted with the making of decisions for action in the practical situation.

Another similar dichotomous classification of research efforts, which has been said to be relevant to research in education, is the distinction drawn by Coleman between discipline research and policy research.[5] While in many areas within the social sciences the classification of research into these two types could be useful, within the field of educational research it would seem to imply a dependence of such research on a discipline such as psychology and the resolution of policy issues by means of a different type of research.

From such analyses of the nature of research, important points can be made; but in so far as these analyses are based on the stereotyped view of educational research, namely that of the psychologist working in the field of education advising the classroom teacher how to teach, they form blinkers which prevent the obtaining of a fuller vision of the contribution research in education can make to educational practice. Consequently, it is necessary to propose a clear rejection of this stereotyped view of educational research and to develop a more flexible and open perspective that will allow educational research to expand and grow.

KEY CHARACTERISTICS OF EDUCATIONAL RESEARCH

As an alternative to the view that research in education is rooted and grounded within the field of psychology, it is suggested in this paper that a more appropriate perspective would be to consider educational research as inter-disciplinary in nature, cutting across or transcending a variety of disciplines. To advance the claim that educational research should command a discipline of its own, forming a field of educational or pedagogical science, would seem to be both restrictive and unfortunate. In recent years many develop-

ments in educational research have occurred through thinking about educational problems from the standpoints of the social sciences of sociology, political science, economics, or demography, or the humanities which include history, anthropology, and linguistics as well as the behavioural sciences, which incorporate the many branches of psychology. Each field can, it must be argued, contribute to the examination of educational questions. In addition, educational problems which warrant investigation, and for which solutions must be sought, are not simply those that occur in the classroom. Education takes place within the home and within the peer group, through the churches and through the mass media, in libraries and museums as well as at work and at play. Furthermore, the findings of educational research are of concern not only to teachers but also to politicians and legislators, school administrators and school board members, parents and script writers, as well as clergymen, youth workers and employers. Each if he wishes to improve a specific policy or practice must draw upon the results of research studies in education or on experience gained in an educational field.

The second key characteristic of educational research is that it must deal with very complex relationships. It is uncommon for an educational problem to be reduced to the study of the relationship existing between two variables. In general, there is a plethora of factors relevant to a problem being investigated and consequently each research study must be conducted in a multivariate context. The appropriate experimental strategies that are employed by the agricultural scientist and the psychologist of removing the effects of many unknown variables by randomization and control are, in the main, denied to the research worker in education, because he is not permitted to influence the lives of his subjects by allocating them at random to treatment groups. The alternative strategy of controlling for the effects of unknown variables by aggregation[6] carries with it dangers, including committing the ecological fallacy of arguing from a generalization that applies to the group to a generalization that applies to an individual. Since the educational research worker is rarely able to design an experiment to test a simple hypothesis in the manner that his colleagues in the agricultural sciences have used so effectively, he must, in general, attempt to develop a complex multivariate statistical model, test the structure of the model, and estimate its parameters and so control for the effects of variables statistically rather than by random allocation.

These two key characteristics of research in education do not carry

with them the implication that such research is more prone to error or that the scientific enterprise is essentially different in kind. However, they do imply that the tactics and strategies employed may differ according to the nature of the problem being investigated.[7] Thus differing approaches which are derived from one or more of the social and behavioural sciences may be required in different situations. Moreover, the multivariate relationships which exist between the many variables influencing the several outcomes must necessarily be disentangled. In the past few years the research worker in education has sometimes sought to employ the research techniques of the anthropologist to study the processes in operation in individual schools; for only by using an ethnographic approach, it is argued, can the complex interactions between the many influences in action within a school be effectively investigated.[8]

An alternative approach which has been employed in educational research has sought to study complex problems through combining the techniques employed by the demographer to handle vast bodies of data with the analytic methods and models of the sociologist.[9] Thus with the aid of the high speed computer it has become possible to conduct large-scale survey studies and to analyse the data collected using a variety of techniques, including path analysis, to test the validity of a model and to estimate its parameters. An example of such research is the series of studies conducted by the International Association for the Evaluation of Educational Achievement (IEA) which will be considered later in this paper. In this approach to investigation in education, we see procedures made available by recent advances in technology being employed in conjunction with the strategies commonly used in the social sciences. However, while the IEA studies illustrate this type of research, it is important to note that research into educational problems takes place in a variety of ways, and that the approach of these studies is only one of the many strategies commonly employed by educational research workers.

The IEA studies have, I believe, made an important contribution to educational thinking throughout the world; and they illustrate very clearly the key characteristics of educational research in so far as it is multivariate in nature and linked closely to several major disciplines including those of psychology and sociology and to a lesser extent demography and linguistics. These studies and their findings as Husen has recently shown[10] have clear implications for policy and practice, and yet they are not policy research, decision-oriented research, or applied research. Furthermore, while they

have a firm theoretical perspective, they cannot be classed as discipline research, conclusion-oriented research, or basic research.

Coleman has discussed at some length in his article on 'Policy research in the social sciences'[11] the nature of the study that he undertook for the US Office of Education and that resulted in the report *Equality of Educational Opportunity*.[12] While it cannot be questioned that this major investigation was commissioned by a governmental authority to produce recommendations for educational policy and practice and must to this extent be classified as a piece of policy research, it is necessary to suggest that some of the conflicts in interpretation of findings that subsequently arose would appear to have stemmed from a failure to examine adequately certain theoretical issues which underpinned the investigation. One such issue was of an analytical kind and involved the controversial conceptual question of what was meant by 'inequality of educational opportunity'. Through failing to examine adequately the theoretical ideas and their relation to procedures of analysis and policy issues, the survey encountered the problem of attempting to do either too much or too little and ran the risk of failing to produce findings on which policy makers could depend.[13]

A further issue arose in specifying the causal model to be employed in the analysis of the data. After the study was completed, the procedures used for analysing the data were strongly challenged and the data was reanalysed by other researchers in other ways.[14] What appeared to be unfortunate was that the causal models employed were not fully examined and justified in the light of theory developed from previous research, so that the alternative techniques could be seen as involving an unwarranted departure from a sound theoretical position. In such a study as the 'Equality of Educational Opportunity Survey' the theoretical issues could not wisely be relegated to a secondary role without the whole of the investigation suffering. The proper balance between theory and policy implications should have been maintained. Thus the viewing of a research undertaking as belonging solely to one type can be accompanied by a danger that one facet of the study will be largely ignored to the detriment of the whole investigation.

THE IEA STUDIES

The major study that I wish to use to illustrate the manner in which research contributes to educational practice is that conducted within

Australia in collaboration with the International Association for the Evaluation of Educational Achievement. The IEA studies have passed through several stages in their 20 years of operation, and the ACER has been involved over a period of about 15 years. The IEA activities have the characteristics of being comparative, co-operative, and universal.[15]

These activities have been comparative in so far as they have brought together research findings conducted within a common framework from up to 25 different countries, including both developed and developing nations. They have been co-operative in so far as IEA activities have involved educationists, psychologists, sociologists, and economists who have worked together to achieve a common goal. In addition, they have the characteristic of universality in so far as they have sought to make generalizations about facets of educational practice, by looking for regularities and similarities across the different educational systems taking part in the studies. In some cases the evidence has been examined for similarities between systems; in other cases the evidence has been analysed in terms of differences between systems in order to make generalizations that would apply across the range of nations engaged in the studies.

The research studies have been massive. In the Science study, for example, the same tests were administered to strictly comparable probability samples in 19 countries, four of which were less developed, and 14 different languages were involved. In all, it was necessary to contact 9700 schools, some 50 000 teachers and 258 000 students. To undertake a study of this kind required a great reserve of trust and goodwill and a huge network of voluntary helpers. Moreover, it is important to note that the investigation was not carried out by governmental decree but by mutual agreement between the national educational research centres engaged in the enterprise. This investigation reflected the spirit of co-operation and goodwill that had been created through the 20 and more years of activity of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the Organisation for Economic Co-operation and Development (OECD) in fostering the collection and exchange of statistical information on education between different nations. If irregularities and inconsistencies existed in the data gathered and analysed, they arose not from deliberate distortion but from the complexity of carrying out a study of this magnitude.

Within Australia a similar level of co-operation and collaboration was required, because this study was the first that had involved

schools of all types, government, Catholic, and independent, at the secondary school level in all six state educational systems. It must be acknowledged with gratitude that the co-operation of the Australian States and Territories was forthcoming, since in two other federal systems, Canada and the Federal Republic of Germany, it was not possible to obtain agreement for such a study to be undertaken. Because six largely autonomous and independent systems within Australia took part in the study, there was a unique opportunity to examine the evidence collected within this country for differences and similarities in the findings reported across the six state systems. In this paper, I will not be undertaking cross-national comparisons but will confine my remarks to relationships recorded within one culture, namely that of Australia in the years 1964 and 1970.

I am greatly indebted to Dr M. J. Rosier and his staff within the Survey Services Unit of the ACER, who were responsible for carrying out the work of collecting and filing the data for the IEA Science Project and who undertook some of the analyses reported in this paper. In addition, I make use of evidence that was collected in the IEA Mathematics Study in 1964.

THE NATURE OF THE IEA INVESTIGATIONS

It is my understanding that in the development and conceptualization of the IEA studies little attempt was made to focus on specific policy issues. Yet from the IEA studies there is a wealth of evidence that relates to both policy and practice in education, and the likely existence of findings based on such evidence was recognized during the planning stages of the studies. To suggest that the studies were focusing primarily on basic research as distinct from applied research issues, or to advance the claim that the studies were conclusion oriented as contrasted with decision oriented, or even to imply that they involved the discipline of comparative education rather than being multidisciplinary and were unrelated to educational policy is to misunderstand their nature and purpose. Simplistic classifications would seem to be totally inappropriate for the IEA studies.

Underpinning the research was a sound paradigm advanced for the purposes of these comparative studies by Dahllöf[16] at an interdisciplinary seminar conducted by IEA in 1967 that sought to examine the theoretical issues associated with the inquiries. This paradigm stated a series of interrelations between objectives, frame

factors, processes and educational outcomes, and has largely been unchallenged in the debate on the findings of the investigations. A more detailed theoretical model was developed to guide certain analyses of the data. Following extensive debate on several occasions, a model was advanced in which home and student background influenced the type of school and type of program within the school, that influenced the learning conditions provided by the school, and that in turn influenced the kindred variables of student habits, motivations, and expectations. Each also had its effects on educational outcomes. This paradigm has been argued fully in the main reports[17] and is presented in Figure 1 in diagrammatic form.

Platt[18] in his discussion of the model was correct in his suggestion that home and student background and type of school and type of program involved 'earlier learning conditions', while the third set of variables involved 'recent learning conditions'. Coleman[19] and Platt in discussing the models used in the IEA studies were critical of the analyses carried out in terms of proportion of variance accounted for. However, evidence in the form of standardized regression weights was also presented and the authors of the Science report argued that these were the measures which most truly indicated the effects of the variables. Where the reports were largely deficient was in failing to form composites or rosettes of variables, and in failing to indicate the magnitudes of the standardized regression coefficients for each rosette. Subsequent analyses would seem to have established that variables cluster together to have a combined influence on educational outcomes. The net effect of a single variable might have been small, but the joint effect of a cluster of related variables would appear to have been quite substantial. The researchers engaged in the study would not, I believe, accept that the conceptual model was in error, but rather that procedures of analysis were not sufficiently far advanced in 1972 to permit the use with confidence of stronger analytical techniques.[20]

It is also worthy to note that analyses were carried out at three distinct levels, namely: between systems, between schools within systems, and between students within systems. The first named group of analyses sought relationships between variables to explain the differences that existed between systems. The second and third sets of analyses sought replications and similarities in effects that would support the stating of generalizations which applied to schools and students in the schools.

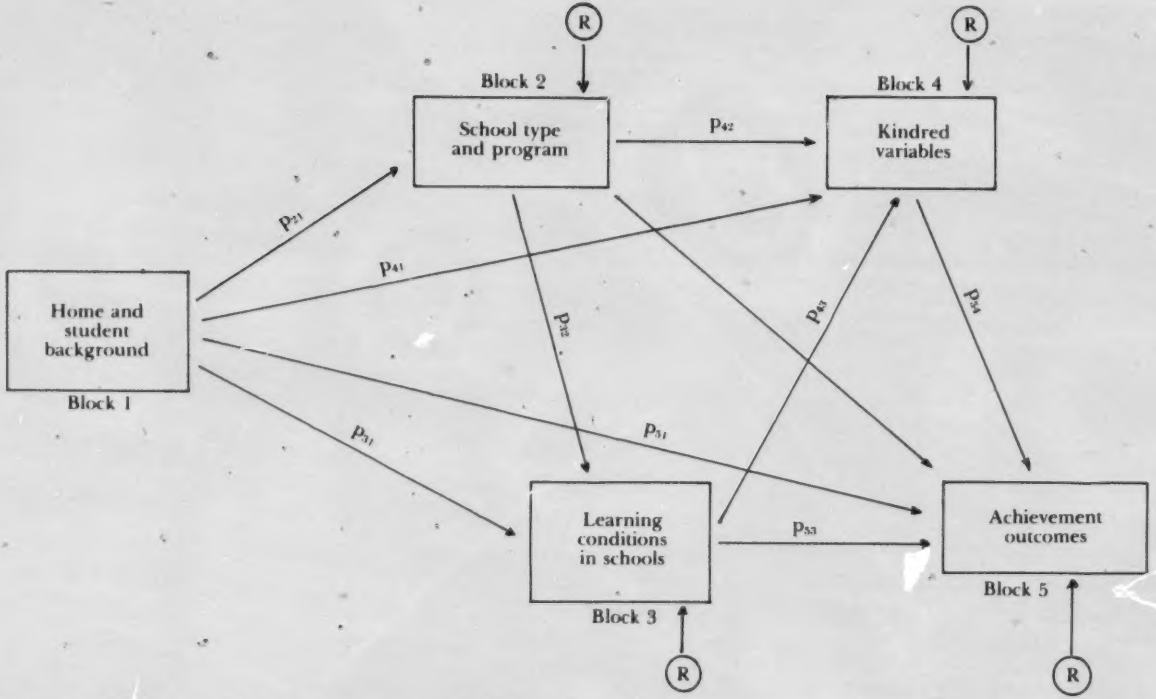


Figure 1 IEA Causal Model for School Achievement

While there has been widespread debate internationally on the theoretical and methodological issues associated with the IEA studies, it is not my purpose in this paper to focus on these issues but to direct attention to some of the implications for policy and practice in Australia that emerged from the findings of the IEA studies. From this discussion it is hoped that fuller understanding of the ways in which educational research contributes to educational policy and practice will emerge. However, in this paper it will be possible to consider only three of the many issues that could be examined. The three issues have been selected because they serve to illustrate most clearly the manner in which it is suggested that educational research could influence educational policy and practice within Australia.

SOCIAL CLASS AND EDUCATIONAL ACHIEVEMENT

Floud, Halsey and Martin in a pioneering study in Britain published in 1956 examined some of the social factors associated with selection for, and success in, secondary education.[21] They also reported evidence of differences between social classes in the material environments of homes and the attitudes of parents towards education. The IEA Mathematics Study of 1964 was the first major investigation that attempted to show evidence for such relationships across a range of countries. In order to assess differences in social class, an international occupational scale was prepared by Anderson of the University of Chicago from the classification of occupations developed by the International Labour Organization.[22] Using this scale it was possible to document for the first time within Australia the level of social selectivity that existed in government schools in Australia in terms of a marked tendency for students from higher professional and managerial homes to stay longer at school than students from homes where the father was an unskilled workman or labourer.[23] In addition, correlation coefficients were reported for relationships between father's occupational status and achievement in mathematics at both the eighth year of schooling and the terminal secondary school grade for samples from government schools in each of the Australian States.[24] The study reported for across Australia a significant correlation of 0.20 between occupational status and achievement at the lower secondary school level, and a non-significant correlation of 0.05 at the pre-university level after a considerable degree of selection had taken place. Highly similar and consistent results were reported from each State to indicate that a

Table 1 Relationships between Occupational Status and Educational Achievement and Attainment

14-year-old level (N = 5307)	Estimated attainment %	Estimated proportion of target population %	Achievement: Science Mean	Achievement: Word Knowledge Mean
Professional, technical	100	13	31.6	19.7
Managerial	100	26	26.4	17.2
Clerical, Armed Services	100	12	24.8	17.2
Skilled workers	100	18	23.9	15.6
Semi-skilled workers	100	19	21.6	14.0
Unskilled workers	100	13	21.1	13.9
Pre-university level (N = 4202)				
Professional, technical	62	27	26.0	22.1
Managerial	40	34	24.3	20.7
Clerical, Armed Services	36	14	24.6	22.4
Skilled workers	19	11	24.5	20.3
Semi-skilled workers	13	8	24.0	20.2
Unskilled workers	14	6	23.0	18.8
Correlations between occupational status and achievement in science				
14-year-old level	0.24			
Pre-university level	0.06			

significant difference in the level of achievement of students at the lower secondary school stage was associated with the social status and social class of the homes from which the students came.

In 1965, Broom, Jones, and Zubrzycki at the Australian National University developed an occupational classification for Australia and subsequently, in 1968, published information on an occupational scale.[25] This scale was used in the IEA Science Study in Australia in 1970 and for large national samples quite striking relationships were recorded between rankings on this scale and both level of attainment associated with staying at school to the terminal secondary stage, and level of achievement on tests of Science and Word Knowledge. The Australian findings reported from this study in 1970 have been recorded in Table 1.[26]

The evidence presented in Table 1 indicates very clearly the influence of social class differences in Australian schools on attainment and achievement at the 14-year-old level before the end of the period of compulsory schooling. A smaller residual effect was observed at the terminal secondary school stage.

Many other studies were carried out in Australia in the late 1960s and early 1970s to provide corroborative evidence. As a consequence, these relationships are now part of the common knowledge among teachers and educational administrators. However, the IEA data are the only evidence derived from large nation-wide samples. It is important to note that similar relationships were reported for all developed countries which participated in the IEA surveys. While it was initially supposed that such relationships did not hold in developing countries, where those students who scored no higher than would be expected by chance were excluded from the analyses on the grounds that they were, in the main, being tested in a language which was not their mother tongue, then strikingly similar relationships to those reported from the developed countries were recorded for the developing countries.

In a period of under 20 years, in a substantial proportion of countries across the world, and in Australia in a lesser period of time of approximately a decade, these very striking relationships were investigated and established with the help of sociologists and with the collection of data from large-scale surveys. It was the general acceptance of these relationships that enabled the Interim Committee for the Australian Schools Commission to recommend in its report in May 1973 that additional resources should be allocated to schools that drew students from disadvantaged homes.[27] Such schools were identified as those containing students who were, in part, from homes lower on an occupational status scale.

It is important to note that of itself the reporting of such relationships is seriously inadequate, since father's occupation is only one index of social class. The underlying relationships are multivariate and complex in nature and are concerned with how differences in the social and economic statuses of the home relate to the attitudes, aspirations, and practices of the home and to both level of achievement and staying longer at school. The relationships reported must also be understood in a wider context, drawing on both psychological and sociological theory before the implications for educational policy and practice become clear. An important consequence of such understanding would be the development of programs which seek to compensate for educational disadvantage.

THE CONDITIONS FOR SCHOOLING

Over the past decade concern has been expressed, not only in Australia but also in other parts of the world, about the level of

resources to be allocated to schools. In this country in recent years, expenditure on resources traditionally associated with school quality has been greatly increased: old buildings have been renovated or replaced; new equipment has been purchased; teachers salaries have been raised; and the number of contact hours for a classroom teacher has been reduced. Subsequently this increased expenditure has been questioned, and as a result of this questioning the issue of the effectiveness of these inputs for bringing about changes in output has been raised.

The findings of the Survey of Equality of Educational Opportunity were widely publicized and their gloomy view, that schools bring little influence to bear on a child's achievement that is independent of his home background and general social context, has been supported by other research workers.[28] Clearly the issues are of immense importance to policy makers, administrators, and to teachers in classrooms; and further research is warranted into the effects on educational outcomes of the conditions for learning provided in the schools. However, investigation into the effects of learning conditions on school achievement cannot be undertaken without the advancement of a theoretical paradigm concerned with the interrelationship between social context, home background, educational provision, and achievement. The paradigm is necessarily complex and involves a network of interrelated variables. Simple bivariate techniques are obviously both inappropriate and inadequate in the investigation of these issues. The type of model required for the examination of evidence relating to these issues was developed by the IEA research team from an agreed-on theoretical perspective, and has been presented in diagrammatic form in Figure 1. It is important to note that the examination of an important policy issue in terms of empirical evidence demands the development of an appropriate theoretical model of sufficient complexity to permit the full range of influential factors to be included in the analyses of the data.

In presenting the evidence available from the IEA Science Study, the following discussion is restricted to the results available within Australia, although parallel analyses were carried out for each of the 19 countries that took part in the study. Table 2 records the percentage of variance explained by variables included in each of the four blocks shown in Figure 1. The model was tested at two levels of analysis, namely between schools across Australia and between students within each State and across Australia. Of the variance

Table 2 Contribution by Block to Total Variance on Achievement in Science

14-year-old level (Schools — 221; Students — 5301)	Block 1 Home and student background	Block 2 School type and program	Block 3 Learning conditions in schools	Block 4 Kindred variable	Total variance explained
Between school analyses					
Australia	49	2	15	2	68
Between student analyses					
New South Wales	17	4	13	7	41
Victoria	17	7	11	6	41
Queensland	23	16	9	6	54
South Australia	17	15	15	5	51
Western Australia	14	16	11	7	49
Tasmania	19	8	13	5	45
Australia	16	7	11	5	39
Terminal secondary school level (Schools — 194; Students — 4202)					
Between school analyses					
Australia	42	5	12	5	64
Between student analyses					
New South Wales	11	3	15	7	36
Victoria	13	3	37	4	56
Queensland	15	3	33	5	56
South Australia	16	8	13	6	43
Western Australia	24	4	13	8	49
Tasmania	14	3	26	6	49
Australia	13	3	20	7	44

between schools 68 per cent at the 14-year-old level, and 64 per cent at the terminal secondary school level were explained in the analyses carried out. Moreover of the total variance 15 per cent and 12 per cent were accounted for by the learning conditions within the schools at each of the levels respectively. These proportions of variance explained were considerably greater than those reported by Coleman and his co-workers from the Equality of Educational Opportunity Survey.

In the analyses which were carried out with students as the unit of analysis, in general, between 40 and 50 per cent of the variance was explained in the 14 analyses reported. Of the total variance, approximately 12 per cent at the 14-year-old level and 22 per cent at the terminal secondary school level could be attributed to variables associated with the learning conditions within the schools. The variables involved in Block 3 concerned with the learning conditions in the schools at the 14-year-old level were: hours spent on the study of science; hours spent on homework; emphasis on practical work and investigation; and hours spent by the teacher in preparation; as well as whether or not the student was studying science. Likewise at the terminal secondary school level the important variables included: years spent studying science; time spent on the study of science and on science homework; the emphasis placed on practical experience in the study of science; placing an emphasis on the acquisition of information as well as teaching to think scientifically; and the availability of laboratory assistants and ancillary staff.

In summarizing the analyses which had been carried out, Rosier reported that there appeared to be a cluster of interrelated factors which influenced level of achievement in science. While each factor in itself might make only a small contribution to effective learning, the factors taken together were interconnected and contributed to the view

> that effective learning of science takes place in a consistent school environment where students receive competent systematic instruction in carefully structured science courses.[29]

The unequivocal evidence from these analyses is that within Australia certain conditions in the schools associated with the teaching of science clearly make a difference to the learning of science by the students. Such findings from the IEA Science Study would seem to support the claims that improving the learning conditions in schools, by increasing the level of resources made available to schools, could make a difference to educational outcomes. However, these results

are also of consequence from a more theoretical stand-point, because they provide support for the appropriateness and strength of the model associated with school learning which had been advanced. Furthermore, these results are of some consequence outside Australia because they provide contrary evidence to the findings reported by Coleman and his colleagues, and widely discussed. Nevertheless, the evidence from other IEA studies would seem to indicate that there are some differences between school subjects in the extent to which the learning conditions in the schools influence educational outcomes.[30] It is thus essential that research work should continue to be carried out to investigate the effects that the learning conditions in the schools have on educational achievement. In the meantime it is important that the evidence available should be accepted by teachers with regard to such issues as the importance of homework, the emphasis placed on practical experience, and the development of carefully structured science courses, for influencing learning outcomes in Science. Likewise the policy maker should be encouraged to act on the evidence, although tentative, that the availability of laboratory assistants and ancillary staff appears to be related to gains in achievement.

A MODEL OF SCHOOL LEARNING

The evidence already presented has indicated that time spent in learning is related to student achievement and this provides strong support for the view that what is done in schools influences learning. Carroll in 1963 proposed a conceptual model that included five factors which influenced school learning.[31] These factors were grouped under two headings: (1) determinants of time needed for learning; and (2) determinants of time spent on learning. In spite of the relevance of this model for curriculum design and course development, there have been very few studies undertaken to test the validity of the model. Consequently it is of considerable interest to examine relationships between time spent in learning and educational outcomes. Nevertheless, one of the reasons why the relationships between time spent in learning and achievement have not been investigated previously has been that school learning takes place in a multivariate situation with a large number of variables intruding and obscuring a relatively simple relationship. Experimental studies that control for the confounding variables by randomization are difficult to contrive with sufficiently large numbers for clear find-

ings to be established. An alternative procedure would be to employ aggregated data with an adequate number of students included within the aggregrates for the relationships to show out clearly.[32] Such a procedure would control for the random fluctuations in the practices of individual teachers, as well as the random behaviour of individual students.

Achievement in Mathematics

In the IEA Mathematics Study in 1964, data were available from five state educational systems at the level of the eighth year of schooling on the time spent in hours per week during the previous seven years in the learning of mathematics together with the time spent during the eighth year. In Table 3 the data have been recorded together with the results of regression analysis which establishes the existence of a relation between time spent and achievement.

The regression analysis indicates that, with large enough groups aggregated together and in spite of the errors of measurement associated with obtaining information on individual performance, it is possible to predict the level of achievement of the students within a system at a defined grade level in terms of time spent in hours per week during the current year and during the previous seven years in learning mathematics. While it is not possible to generalize with confidence to the performance of individual students, it is possible to record from the evidence contained in the regression equation that for each hour per week spent during the current year in learning mathematics the average level of performance will rise by approximately three score points ($\beta_2 = 3.11$) and, for each hour per week spent during the earlier years in learning mathematics, a gain of a little over half a score point ($\beta_1 = 0.59$) can be predicted. The implications of these findings for curriculum planning cannot be denied.

Achievement in Science

Similar relationships were obtained for time spent learning science and achievement in science from the data collected in the IEA Science Study in 1970. However, in this study evidence was not available to estimate time spent in earlier years. The results of the analyses carried out at both the 14-year-old level and the terminal secondary school level have been recorded in Table 4.

Table 3 Estimated and Measured Mean Scores on Mathematics Test at Eighth Year of Schooling

State	Total time in hours per week over first seven years x_1	Time in hours per week during eighth year x_2	Estimated mean scores	Measured mean scores	Difference between estimated and measured means
New South Wales	22.5	4.74	17.13	16.10	+ 1.03
Victoria	26.8	4.68	19.46	21.00	− 1.54
Queensland	35.0	4.74	24.45	23.96	+ 0.49
Western Australia	21.2	4.90	16.86	16.94	− 0.08
Tasmania	26.2	3.68	16.00	15.92	+ 0.08
Results of regression analysis				$y = -10.8 + 0.59x_1 + 3.11x_2$	
	Degrees of freedom	Sum of squares	Mean sum of squares	F value	Significance p
Due to regression	2	46.80	23.40	12.7	< 0.10
About regression	2	3.68	1.84		
Total	4	50.49			

Table 4 Achievement in Science and Time Spent in Learning

Date of testing 1970	14-year-old level			Terminal secondary school level				
State	Number of students	Science score mean	Time on science hours/ week	Number of students	Science score mean	Time on science mean hours/week	Science homework mean hours/week	Total time on science hours/week
New South Wales	701	23.48	3.28	554	24.21	4.52	2.98	7.50
Victoria	699	20.81	2.58	462	23.55	4.37	3.58	7.95
Queensland	668	25.24	3.96	466	25.43	4.85	3.91	8.76
South Australia	786	26.49	3.95	503	29.34	5.26	4.73	9.99
Western Australia	669	26.46	3.67	411	25.65	5.00	3.80	8.80
Tasmania	631	21.64	3.31	176	25.72	6.30	3.34	9.64
Relation with criterion								
Correlation r			0.88			0.45	0.84	0.85
Regression a			9.79			19.1	15.1	9.94
b			4.12			1.29	2.83	1.79

The strength of these relationships is clear and it is evident that, for each hour per week spent on average in the learning of science during the current year at the lower secondary school level, there is an expected mean gain of approximately four score points (β_1 = 4.12) and that, for each hour per week spent at the terminal secondary level, there is an expected mean gain of approximately two score points (β_1 = 1.79). At the terminal secondary level, time spent at home makes a far greater contribution to learning than time spent in the classroom at school, but at the 14-year-old level time spent on science homework does not contribute. These relationships between time spent and achievement have been displayed in Figure 2.

These relationships between time spent in learning and achievement have been shown by Carroll to apply to the learning of other subjects such as French as a foreign language.[33] It is evident that for the planning of courses of instruction in schools the consequences of the relationships reported above cannot wisely be ignored. Furthermore, the evidence is unequivocal in establishing the influence of schooling on the learning of mathematics and science.

The results presented in this section have, in general, been accepted by teachers and administrators. One illustration will suffice. In the late 1940s following the analysis of the data collected in the Curriculum Survey,[34] a decision was made in Queensland to reduce the time given to the teaching of mathematics and to increase the time given to reading, in order to lift the level of achievement in reading. Performance in mathematics was found to be extremely high, and it was apparent that a drop in achievement would not have serious consequences. Nevertheless, in recent years teachers and policy makers have sometimes questioned, on the basis of evidence of dubious worth, whether time spent in learning was related to achievement outcomes.[35]

The results from the IEA studies within Australia make clear, to the planners of the curriculum of the schools, that it is desirable to determine the level of performance to be expected from students with respect to various learning outcomes, and then to allow an adequate amount of time for those outcomes to be achieved. It is evident that if time is given to one subject in the curriculum, then on the average, increased learning will take place. However, such time can only be obtained at the expense of another subject in the curriculum. While this implication is stated in its simplest terms, the theoretical model advanced by Carroll, on which this research is based, also reveals the other factors that are likely to influence learning outcomes.

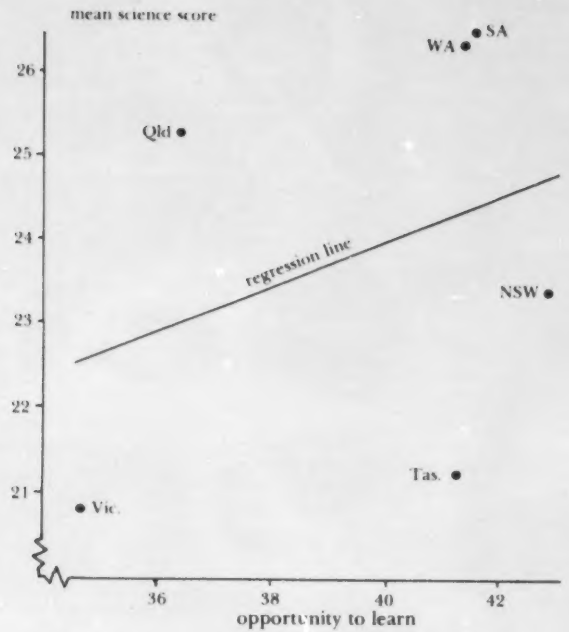


Figure 2(a)

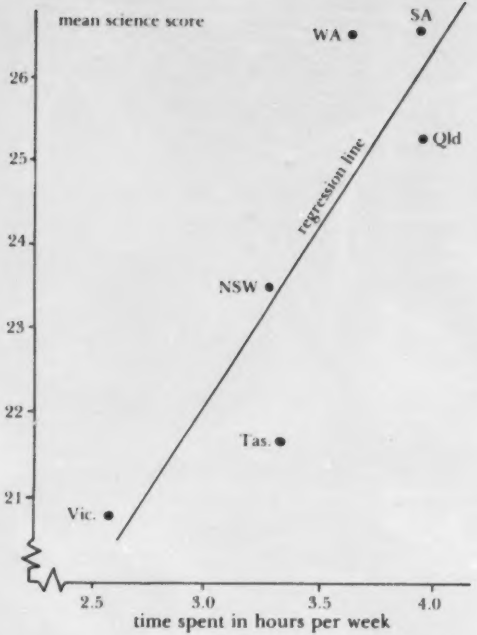


Figure 2(b)

Figure 2 Mean Science Scores with Time Spent in Learning Science

CONCLUSION

In this paper three examples have been selected from the findings of the IEA studies in Australia to illustrate the contribution of educational research to educational practice. Many other findings could have been chosen from a substantial body of data to show similar contributions to educational thought and practice. However space has not allowed this. It is suggested in this paper that educational research does not proceed within clearly defined categories of basic and applied research, conclusion-oriented and decision-oriented research, or of discipline and policy research. The advances in educational research considered in this paper would appear to have arisen from the interaction between policy questions or practical problems and theoretical issues. Each contributes to the other; and each is less meaningful without the other. Furthermore, it is important to recall that the key characteristics of educational research would seem to involve the drawing of perspectives and techniques from several disciplinary areas as well as the development of models and multivariate procedures which would permit many variables to be examined simultaneously or brought under control so that they did not confound important relationships.

Educational policy and practice are rarely influenced by a single research finding. It would appear more common for a body of findings to be assembled together in relation to a theoretical perspective in order to provide corroborative evidence to guide policy and practice. It would be potentially dangerous if a single piece of research were allowed to have a substantial impact. Getzels has suggested:

> Research may have the greatest effects on education not so much where it attempts to alter an element of practice directly, as indirectly — where it raises new questions and contributes to transformations in the general paradigm of the human being.[38]

It would appear sound to argue that only when there is a substantial body of confirmed research evidence, which is strengthened by its relationship to sound theoretical perspectives, should educational policies and practice be widely changed.

This view of the nature of educational research and its relationships to both theoretical perspectives and empirical findings has important consequences for the dissemination of educational research. The isolated research result has little significance outside the office of the research workers. It is only the substantial body of

research evidence discussed and interpreted in relation to theory that should be widely disseminated.

Procedures have been developed by Glass and his colleagues to combine the results of many disparate studies which have recorded findings in a specific field. These procedures have proved to be of considerable value in revealing important relationships in fields that have previously defied any consolidation of research findings.[37]

However, it is not the task of the researchers alone to assemble together the body of research findings, or to provide the theoretical perspectives which must be related to the findings. It is the task of all who are engaged in educational debate, including those who undertake research, to assemble and present the products of educational research and educational thought to their colleagues who are responsible for the determination of educational policy or who can influence educational practice.

The three examples of research briefly summarized and discussed in this paper illustrate the interaction between educational thought and the more specific findings of research. Moreover the examples involve policy and practical considerations that are of consequence in Australia today. They show that research can and does make a contribution to the determination of educational policy and practice, but they also reveal that underlying the research enterprise is an extensive body of educational thought which serves to guide and direct the research and which in turn is modified and extended as new research findings are brought forward.

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[34] W. C. Radford, *Curriculum Survey: Summary Report to the Directors of Education*. Melbourne: ACER, 1950.

[35] See, for example, T. Husen, *The Learning Society*. London: Methuen, 1974, 46-56.

[36] J. W. Getzels, Paradigm and practice: on the impact of basic research in education. In P. Suppes (Ed.), *Impact of Research on Education: Some Case Studies Summaries*. Washington, DC: National Academy of Education, 1978, 82.

[37] See G. V. Glass, Primary, secondary and meta-analysis of research, *Educational Researcher*, 1976, 5(10), 3-8.

6

A Conceptual Analysis of Educational Research in an Administrative Context

R. W. Rawlinson

PURPOSE

This paper attempts to analyse some of the major issues associated with the conduct of educational research in an administratively-oriented system. The term 'research' as used here is intended to denote a mode of enquiry which is systematic, objective, and based upon appropriate methodology. It can be deemed to apply to a wide range of educational areas including studies in curriculum, learning, teaching, evaluation.

ASSUMPTIONS

Basically this paper rests on the following main assumptions:

(a) that research is a unique activity;
(b) that questions of quality, relevance, and contribution in research are directly related to the research context in which the work is undertaken;
(c) that large educational systems, regardless of organizational structure, are ordered in terms of levels of administrative responsibility;
(d) that the vitality of the link between educational theory and educational practice is dependent upon a carefully delineated functional relationship between the relevant administrator and the researcher;
(e) that the career structure for the researcher and the reward system require certain safeguards.

Viewed from the position of extremes where research implies freedom and administration implies control, the concept of research in organizations which have a high administrative responsibility would seem to present a paradox. Indeed the initial hypothesis might be that the greater the extent of administrative control in the organization, the less the extent of freedom for research, i.e. incompatibility.

In any administrative setting, control is directly related to the need to organize and co-ordinate resources and activities to fulfil certain goals. An educational organization has the responsibility for establishing and maintaining a stable mechanism for accomplishing its objectives. To achieve these ends, a large administrative structure specifies roles which officers are required to fulfil, status and progression being determined in relation to such roles.

It is assumed that compliance with such expectations will lead to greater efficiency and that deviation will tend to weaken not only the control of the organization but also its effectiveness. Does such a pattern of expectations accord with the characteristics required in the researcher? Basically he needs a climate in which he can exercise his initiative, his creativity, his independence and his impartiality, and where he can readily communicate with relevant units within and without the organization.

When viewed against this unique admixture of aptitudes and abilities, it would appear that the hypothesis of incompatibility could be upheld, certainly in a tightly structured context.

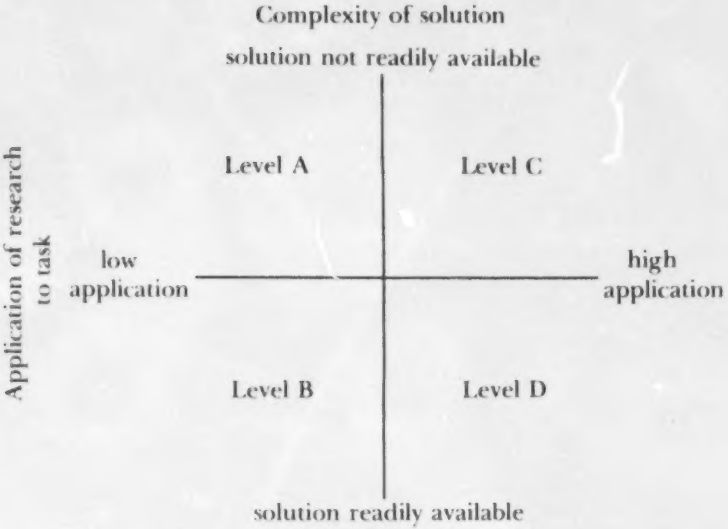
There is, however, a further criterion on which compatibility can be considered. Here it is necessary to examine the relationship between research and administration from a functional view-point — an intersecting function involving task solution.

Consider first research in terms of task resolution in an administrative context. It is contended that the uniqueness of the research function is derived from two main sources:

(a) the application (high or low) of research to the task; and
(b) the complexity of the solution (that is, solution readily available or not).

The diagram presents:

(a) on the horizontal axis, a continuum from low application of research procedures to high application of research procedures;
(b) on the vertical axis, a continuum from solution readily available to solution not readily available.



The implications of the figure are clear. The further one moves to the left on the horizontal axis the more directly one is committed to an administrative function; by contrast, to move to the right is to be more directly involved in research. Similarly, there are variations in the applicability of research to task solution. At the base of the vertical axis the task can be readily solved through well-established procedures; at the top it will be noted that while the problem can lend itself to research, appropriate procedures have to be devised.

Such a functional analysis can, of course, draw only bold lines. At the same time, however, it highlights both opportunities and problems. The opportunities are to be found in the proximity of the researcher to both the policy maker and to the schools themselves, in the availability of a wide range of facilities and in the totality of the educational framework ranging from theory to practice.

EMERGENT PROBLEMS

The scope for problems is inherent in the fact that in the functional context it is possible to draw only bold lines, whereas in the administrative context the lines are more clearly delineated.

It is all too evident that, as well as potential for research, there is potential for non-research. The researcher can readily become embedded in the servicing component of task solution to the detriment of research and in many cases to the detriment of existing (or at least required) administrative components.

I shall analyse in more detail some of the potential tension points arising from the existence of the two structures.

Control

It is only to be expected that the policy maker seeks to solve tasks through the most efficient and authoritative sources available. He needs answers; he often needs them quickly; he needs to base decisions on as much objective evidence as possible; and he needs to consider the arguments for and against propositions.

In many cases the researcher is the person most readily available who has the specialized knowledge, or who has access to the data required, and who has the necessary versatility. It follows that many of the practical problems which emerge from pressure points within the system are likely to be directed to research personnel.

To follow this approach exclusively is to inundate the researcher with short-term practical problems and thus to deny him the opportunity to initiate, to undertake long-term projects, and to give ample consideration to the full spectrum of education, beginning with its theoretical bases.

While such practices are not conducive to research, it has to be recognized that there is little to be gained for the system as a whole unless policy makers have access to relevant research resources. Likewise, unless the researcher has access to the system, his efforts will inevitably result in his isolation.

At the basis of such a delicate balance is a mutual understanding of respective tasks which operationally can only take place if there is communication and co-ordination on the basis of the task itself.

Authority

An associated area of potential tension arises in situations where the researcher is expected to contribute to task solution without necessarily having administrative authority within his organization. Inappropriate administrative responsibility can, in large measure, negate the principles of freedom and opportunity (including time) for research.

The absence of administrative responsibility, or at least ready access to it, presents difficulties in relation to obtaining resources, in

negotiations, and in terms of the researcher being in a position to declare the relevance or irrelevance of tasks.

The researcher's basic authority is vested in his work, not his position. It follows, therefore, that a co-requisite for effective research is that the policy maker must have an appreciation of the advantages and limitations of the researcher's mode of task solution. An absence of such an understanding can lead to gross misinterpretation and can, in fact, render the researcher's efforts irrelevant.

By way of contrast, it is possible to conceive of situations where the researcher's findings are fully understood by the policy maker, but which, if made available in a particular climate, could present major difficulties for the administration. It is in such cases that the conflict between internal and external authority can become most acute: above all the researcher must uphold the integrity of his discipline.

Task Relevance

A further tension point arises where there is no clear demarcation between task area and task level. *Task area* refers to task content, e.g. curriculum, ethnic education, mathematics, primary education, examinations — areas which are specified within the education structures. *Task level* can refer to either the level of administrative responsibility necessary for decision making or to the level of competence required for task solution.

In practice, task areas and task levels defined in terms of administrative authority are delineated and roles defined accordingly. The absence of task definition in terms of level of research competence presents a situation where work can inadvertently be allocated to research personnel on the basis of task area rather than task level.

The scope for misinterpretation is obvious. Research units, which are not classified in terms of task analysis structure, can readily become the repository for any form of work which falls into a particular task area and/or for which there is no defined location in the organization. Knowledge of a subject and/or previous association with it, rather than the level of research competence required, can become criteria for relevance.

Task Product

The quality of the task product is relative to purpose and processes. In the administrative structure, questions of quality are closely related to specific problem solution and the recognition of an individual's contribution tends to be seen in the light of solution, relevance, and efficiency.

The researcher, on the other hand, because of his training and purpose tends to orient his contribution to an extensive rather than intensive framework, being particularly interested in questions such as control, sampling, and generalization. Further, for purposes of his general professional standing, he has to ensure that his work will be acceptable in the broader academic context.

As the quality of the researcher's contribution rests not in the position which he may hold within his organization, but rather in the professional expertise as evidenced in his research, he can find himself in a position of conflict between recognition inside and recognition outside the organization.

The issue here is not whether one is more important educationally than the other; the fact is that the criteria applied can be very different. Unless the nature of these differences is recognized, the researcher can find himself stranded; he has inappropriate experience for administrative progression and his research can be deemed inappropriate for academic recognition.

Career

The researcher's unusual position in relation to the normal structure and his need to initiate and exercise control over his research pose further tension points as far as reward and advancement are concerned.

As he does not fit into the administrative structure, then he has difficulties if he expects to partake of its fruits. Herein lies one of the real tests of compatibility: will the researcher be prepared to find solace in dedication to research alone or will the administrator be prepared to accord rewards which are at least commensurate with those deemed to apply elsewhere? One would find it difficult to pretend that the solution is to be found solely in dedication and, even if it were, that such would be in the best interests of education.

Implicit in the question of career is the associated problem of insularity. Unless the researcher can remain aloof from the machinery of administration, he runs the risk of becoming too involved with his own system to keep abreast of developments which are basic to his contribution.

One would feel that it is in the interests of educational institutions generally to forge co-operative links in relation to both task definition and solution. Likewise there would appear to be a need to clarify the relationship between the vertical and horizontal structures so that the researcher is not disadvantaged through the dominance of one over the other.

There is every reason to support the view that the policy maker should foster research which is of high quality, which is relevant to educational needs, and which can make a contribution to the objectives of the organization as a whole.

At the same time, it is essential to acknowledge the working requirements of the high-level policy maker and the fact that there has to be, in the organization, a unit which is readily available for decision-making purposes. For this reason, the notion of levels of task solution are seen to be central.

To support a dichotomy between administratively-oriented task solution and research-oriented task solution is to imply the existence of at least two different identity structures: one which has its recognition vested in administrative authority; the other which has its recognition vested in academic authority.

Viewed in this way, it is not difficult to see why some educational leaders such as Husén, support the independent structure for research-oriented task solution. The patterns of development in the United Kingdom and the United States seem to reflect a similar trend through their practice of commissioning tasks.

Such an approach does appear to lessen the extent of potential tension. One wonders, however, whether such a structure adds another link in the already over-stretched chain of communication and whether, at this level of operation, the benefits are not more likely to accrue from translation and transformation within rather than between structures.

It would, however, be naive to contend that the within structure is easy to formulate or that the ideal set of circumstances can be formulated. However there appear to be three major areas where principles can be delineated.

Control and Authority

(i) acceptance of research as a unique function necessitating a unique framework for operational effectiveness;
(ii) recognition of the primacy of the researcher's integrity in the pursuit of task solution;
(iii) recognition of both right and opportunity to initiate and undertake research which is considered to be consistent with the educational needs of the organization;
(iv) acceptance that the researcher's basic authority is vested in the academic standing of his work.

Task Relevance and Product

(i) task relevance to be decided in relation to level rather than area criteria;

(ii) provision for task transference at the appropriate time.

Professional Involvement and Progression

(i) communication and interaction between educational policy makers and researchers on relevant educational issues;

(ii) continuing opportunity to use professional expertise to the full;

(iii) maximum provision for co-operative endeavour with other organizations;

(iv) continuing opportunity to improve professional qualifications and for advancement;

(v) freedom and encouragement, together with opportunity, to publish

CONCLUDING REMARKS

Clearly there is considerable potential for compatibility and mutual benefit for the researcher and the policy maker working in an administrative context. It must be emphasized, however, that compatibility is not synonymous with compromise. Such a position can only spell disaster for the researcher and for the policy maker. Compatibility will depend on the extent of mutual recognition of, and respect for, relevant roles, contributions, and rewards. Further it is suggested that the most effective way of integrating research into the total administrative framework is to relate both vertical and horizontal structures on functional criteria.

If the researcher is to make a contribution to educational practice, he must be prepared to become involved in the process of education, but he must not lose sight of his unique position or of his integrity in the pursuit of truth: if the administrator desires to gain the most for education, he must recognize the uniqueness of the researcher's contribution and ensure that appropriate provisions are available to allow this unique contribution to be realized.

Viewed realistically, the enlightened researcher in any context has to acknowledge the existence of certain administrative boundaries, and the enlightened administrator has, correspondingly, to acknowledge the existence of certain research non-boundaries.

NOTE

[1] This paper is based on a submission to the Victorian Education Department Curriculum Services Enquiry, 1977.

7

The Establishment of Dialogue Between Researcher and Policy Maker

N. L. Baumgart and B. C. Low

INTRODUCTION

Two kinds of frustration voiced in recent years indicate the lack of communication between policy makers and researchers and the need for more research in education to be policy oriented. On the one hand, those responsible for educational policy formation and decision making at the system level have expressed disappointment that researchers have failed to deliver the kind of research findings relevant to crucial decisions. On the other hand, some educational researchers have felt frustrated when, for whatever reason, their research has had little impact on important educational policies and decisions. This is probably not a significant problem for those researchers committed to basic research and to the pursuit of knowledge *per se*. But for those who believe their research should have some short-term utility and should also contribute to directions for future development, these frustrations are very real.

The two kinds of frustration both stem from an apparent inability of educational research to contribute to major policy issues. In a paper originally presented as an invitational address to the 1974 Australian Association for Research in Education Conference in Melbourne, Start[1] suggested a number of reasons for this. He noted that policy decisions were often taken not on solely educational grounds and that social, political, or economic criteria could be dominant. He further suggested that educational research was frequently ineffectual for policy makers because:

(i) the time scale was inappropriate. Researchers frequently responded to immediate problems and neglected likely future problems;

(ii) solutions implied by research findings were not always feasible in practical terms;
(iii) research results were often equivocal. Researchers presented findings appropriately qualified in terms of a study's limitations and hence clear guidelines for policy decisions were difficult to infer;
(iv) research results were seldom disseminated in a format likely to be heeded by 'key' policy makers;
(v) researchers experienced conflict between actively recommending implementation strategies based on research findings and keeping an open mind as a prerequisite to further research.

Starr[2] advocated, among other things 'a much closer dialogue between the researcher and the policy-maker'. On the assumption that such dialogue is essential, the present paper argues that one way to promote such dialogue is to focus a research study on the interaction between policy maker and researcher.

Although the strategies suggested in this paper could be applied in many different policy settings, the principal thrust of the article is towards major policy decisions taken within identifiable systems of education. *Major decisions* are defined as those having implications for large numbers of people (say students or faculty) or those involving expenditure of large amounts of public money. The term *system* is interpreted broadly to range from an aggregation of institutions at national or state level sharing common policies through a single institution.

Objectives for the present paper are as follows:
(i) to define key terms related to the topic;
(ii) to explore current and potential relationships between policy decisions and research information relevant to those decisions;
(iii) to develop a research strategy for initiating dialogue between policy makers and researchers;
(iv) to describe a simple taxonomy of policy decisions;
(v) to describe a similar taxonomy of information relevant to policy decisions;
(vi) to identify research methodologies relevant to (v);
(vii) to consider the interface of (iv) and (v);
(viii) to examine the need to describe the structural domain in which policies and research information are communicated;
(ix) to invite from researchers and policy makers either critical comments on the research proposals or expressions of interest.

A focus on educational decisions has occurred both in the research literature and in the evaluation literature in recent years. Thus the often cited report of the Committee on Educational Research of the National Academy of Education[3] drew the distinction between decision-oriented and conclusion-oriented research. Similarly, several evaluation models with an emphasis on decision management, for example, those of Alkin[4] or Stufflebeam et al.,[5] have received widespread attention.

The present paper assumes that an educational decision requires a choice from a set of discrete and competing alternatives. It must be acknowledged that this is a simplistic assumption and that there is a danger that it could lead to an analysis which is superficial and over-generalized. Harman[6] presented 12 theories relevant to understanding policy processes in education and argued that a multiplicity of approaches was necessary to cope with the diversity and complexity inherent in education policy processes. It must also be acknowledged that the literature on decision making questions assumptions of purposiveness and comprehensiveness implied in the later analyses in this paper. However, the present authors approached the problem not as policy analysts, but as educational researchers concerned to increase the relevance of their research activity. Moreover, preliminary interviews with policy makers suggested that, although some decisions were incremental in nature, many more involved rational choice from among a set of readily identifiable alternatives.

As noted by Birch,[7] 'the term *policy* is an elusive one'. As used in this paper, the term *educational policy* is both broader in scope and less explicit in its specification than the universal set of educational decisions.

> Policies within an organizational setting may be viewed as generalizations that involve the goals of the organization, as well as the ways in which goals can be implemented. Policies affect the structural properties of organizations, the directions they take, and the way in which resources are allocated.[8]

To put the two terms together, as this article does, and to speak of a policy decision implies at least an identification of discernible alternatives within the policy requiring a deliberate choice on the part of the decision maker. It means that, within the general policy framework, particular issues are made explicit to permit action or a statement of intended action.

Policy research or policy-oriented research seeks to collect, analyse, and report information that will facilitate the making of policy decisions and/or the formulation of policy statements. The attempt here is to provide research findings to assist, or in some cases to influence, the decision maker. It should not be confused with research on how policy is made, or what the political scientists term policy analysis. The distinction between these two terms is clearly explained by Spuck et al.[9]

It is appropriate to note here the now widespread use of the term *policy sciences* as distinct from the physical and social sciences and the rapid expansion in the literature associated with this. The boundaries of this literature are not easy to define and it tends to cross a number of different areas of study. A good deal of the literature overlaps with that variously described as futurism, futory, futuristics, and so on.[10] Lonsdale[11] distinguished policy research from future research although he drew attention to their close interlinking characteristics.

THE ROLE OF POLICY RESEARCH

The relationships between research findings and policy decisions are most complex. Even where educational policies do rely heavily on research information — and this may be a rare event — it would be naive to assume a simple one-to-one relationship between the information and the policy. Start discussed four categories for research before suggesting that 'perhaps policy research is to social sciences what applied research is to the sciences, technologies and engineering'.[12]

Using a familiar systems approach, Craven distinguished decision making within an organization on three levels — 'operations, management, and planning'. He defined these and their relationships to policy as follows:

> Operational activities are those focusing primarily on routine, day-to-day detailed transactions within an organization . . . Management activities are those that provide for the general control of routine operations. Planning activities are directed at the short- and long-range development of program and policy direction of the institution. With risk of over-generalizing, operational activities effect policy, management activities monitor the implementation of policy, and planning activities establish policy.[13]

Craven warned that the boundaries between these types of decisions were often blurred but contended that a significant implication of the classification was that different kinds of information were

required by different types of decisions. Thus information required for operations was likely to be 'routine transactions' typically produced as 'routine reports, usually in a fixed format'. At the next level, information necessary for management decisions was less detailed and was usually derived from 'management analysis and special reports'. Craven saw this information used 'for monitoring, co-ordinating or controlling operational functions, for responding to *ad hoc* requests . . . in planning, and for providing reports to outside agencies'. At the planning level where policy statements are formulated, the information needed to be in a format that summarized broad trends rather than gave precise details.

In as much as it provides a factual data base, educational research may contribute to the management and even to the operations functions of an education system or organization. What Start[14] referred to as the 'optimising' role for educational research would seem to be of this type. Given that a policy decision has been taken, research can aid management in making its implementation as efficient and as effective as possible. Decision-management evaluation models (for example, as proposed by Alkin[15] or by Stufflebeam et al.[16]) would also seem to fit here. Formative evaluation models at least overcome the problem of time lag referred to above.

However, the major potential contribution of policy-oriented educational research, and one as yet unrealized, is towards planning functions and their attendant formation of policies. It is at this level that writers express different views about the role of educational research. One possibility is to view educational research as having a service function. The onus is on the policy maker to spell out policy needs; the onus is on the researcher to meet these needs and to convey findings to the policy maker in a mode which is understood and in a time frame relevant to policy decisions. Start described the relationship as follows:

> . . . policy research usually stems from a policy need and that has to be communicated to the researcher by the policy maker. Such a route should not be exclusive naturally, but it would be the main one. Hence there must be a dissemination of 'policy' to those capable of undertaking the research.[17]

While this may be a natural relationship when policy makers and researchers work within the same system, the service function of policy research could occur in a broader framework. Thus Start[18] has anticipated future expansion in the client-contractor roles for policy makers and researchers respectively with more emphasis on

commissioned research. He considered other possibilities in which public discourse occurred or policy maker and researcher exchanged ideas but saw these limited by the 'high political vulnerability' of proposed policy if it were 'peddled in the open market place'.

Other writers have questioned whether this is a viable role for policy research. Cohen and Garet[19] claimed that such a role for policy research needs to make two assumptions — firstly 'that policies consist of discrete decisions' and secondly 'that applied research is more authoritative than ordinary commonsense ideas about social policy'. They question the validity of these assumptions, particularly in education. They see a policy, not as a set of decisions with clear alternatives, but 'as a grand story: a large and loose set of ideas about how society works, why it goes wrong, and how it can be set right'.[20]

On the basis of their analysis, Cohen and Garet concluded that policy-oriented research is likely to influence 'broad assumptions and beliefs underlying policies' rather than particular decisions. Hence they claimed that policy research needs to be seen as a discourse between researcher and policy maker in which both parties can initiate, set rules, express views, request clarification, question, and so on.

In similar vein, Etzioni[21] claimed that policy research ought not to 'take on specific assignments' but should maintain a critical stance. In this respect, he claimed policy research differed from applied research 'in much the same way that strategy differs from tactics; it is more encompassing, longer-run in its perspectives, and more concerned with the goals of the unit for which it is undertaken'. Iannaccone[22] adopted a similar view and claimed that policy research needed a critical component rather than being simply solution oriented. Thus the policy researcher could provide alternative approaches to problems and have the responsibility for challenging the assumptions of policy makers.

In the view of the writers, the relationship between policy maker and researcher in education is, and is likely to remain, both complex and variable. Nevertheless it is possible to describe policy research along a continuum ranging from a solution-oriented stance on the one hand to a critical one on the other. Steps along this continuum could include instances where:

(a) the policy has been determined, broad strategies for implementation are known, and research or evaluation components are needed to assist implementation;

(b) the policy exists in general terms and research is needed to identify actions or strategies most likely to fit the policy;
(c) research is needed to assist in the formulation of the policy.

The relationships between policy maker and researcher are likely to differ considerably at points along this continuum. The relationships will also vary according to the nature of the policy, the decision setting, the social and political climate, and so on. But whatever the relationship, the need for adequate communication between policy maker and researcher is evident. Yet it is just this ingredient which is most elusive. It is probably the absence of dialogue which is at the heart of the two kinds of frustration discussed initially in the present article.

A STRATEGY FOR INVESTIGATING THE INTERACTION BETWEEN POLICY MAKER AND RESEARCHER

Concerned about the inadequate dialogue between policy makers and researchers, the authors decided to embark on a series of research studies in which the initiation of such dialogue was an integral part of the methodology.

The strategy was a simple one. As a first stage, policy makers were asked to describe past policy decisions and the kinds of information used for those decisions. With these data as a base, systematic relationships were then sought between kinds of research information and types of policy decisions. As a prerequisite to this examination, taxonomies permitting the classification of policy decisions on the one hand and research information on the other were developed. These taxonomies are described later in this paper.

A research study could be stopped at this initial stage. Description of relationships between kinds of information and types of policy decisions within a defined system would constitute findings for significant research problem. Provided the system was adequately described, it is feasible that others working in similar systems might attempt to apply the findings, given the usual cautions applying to the external validity of research results.

However, such a study seemed to have far more potential if taken to a second stage. This would involve identifying a set of researchers potentially able to interact with the policy makers and giving them the results of the first stage expressed in a suitable format. By then seeking their reactions to the results and by feeding these reactions back to policy makers, a form of dialogue could be initiated.

Whether or not such dialogue could be maintained would depend on resources and management strategies available. For example, the existence of some form of clearing-house might be sufficient to maintain the kind of communication envisaged.

The strategy described above has a number of advantages. The analysis described as part of the first stage can indicate to researchers the kinds of policy decisions where educational research is likely to be influential. Just as importantly, it can also suggest policy questions where other criteria are likely to overshadow research evidence. In a reciprocal way, the reactions of researchers fed back to policy makers can suggest areas where research findings are likely to yield most benefit. In some cases, alternative ways of analysing policy issues may be suggested.

A further advantage of this strategy is that it does not assume an isomorphic relationship between a particular policy decision and research findings as is usually the case in commissioned research. Moreover it permits both policy maker and researcher to appreciate the work of each other and yet to adopt a critical stance with respect to their expected roles.

TAXONOMIES FOR POLICY DECISIONS AND INFORMATION RELEVANT TO THOSE DECISIONS

In examining general relationships between policy decisions and research information, it was first necessary to develop relevant taxonomies. At this stage of the research, it was considered more productive to focus on identifiable decisions by policy makers in which alternatives were mooted and some rejected. However, these specific policy decisions may only be indicators of broader policies as conceived by Cohen and Garet.[23]

Since the major purpose of the taxonomy was to facilitate communication, simple categories were preferred to complex ones even if it proved difficult to classify some policy decisions. Furthermore, communication would be facilitated if separate taxonomies were developed for

(i) the policy decisions; and
(ii) the information relevant to those decisions.

In addition, the description of the interface between these two taxonomies for different classes of policy decision was one research objective. The two taxonomies are now described briefly.

Taxonomy of Policy Decisions

Figure 1 represents a two-dimensional taxonomy for educational policy decisions.

The first dimension is labelled *Substantive content* of the decision and has six categories — Organizational, Curricular, Fiscal, Manpower, Physical plant, and Public relations. The first category is essentially structural and the remaining five are functional.

The second dimension is a time one. The time refers to when the action or intended action occurs, not to when the decision is taken. Initially, with an emphasis on planning, only two categories were included — short- and long-term. Operationally, *short-term* is defined as occurring within the next two years, and *long-term* as occurring beyond that time.[24] The time scale was then extended to include current time in an attempt to accommodate decisions based on formative evaluation strategies. What Start[25] described as 'band-aid' decisions also fit here. Finally a historical category was included to meet the cases where research findings are used to evaluate actions taken previously. Summative evaluation can be of this kind although (hopefully) it will carry implications for future action even if this future action is to maintain the *status quo*.

These two dimensions — a substantive one and a time one — were considered central to a policy decision. A particular policy decision is classified on these two dimensions so that it can be located unam-

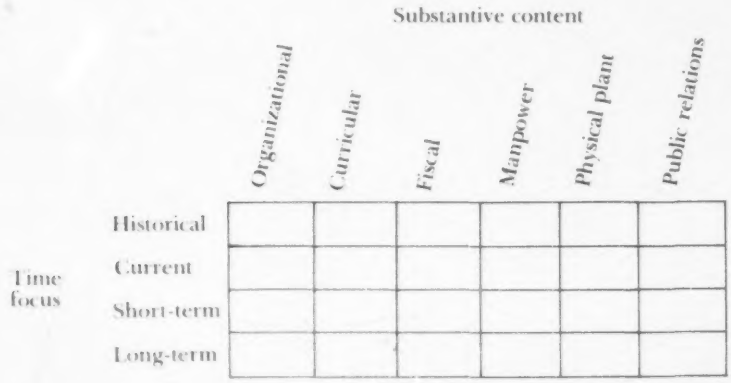


Figure 1 Two-Dimensional Taxonomy for Policy Decisions

biguously within one cell of the matrix in Figure 1. Moreover a policy decision has many other characteristics — it is made by a particular person or group, it occurs within a particular setting, and so on. Factors such as these were treated as subsidiary ones although they are examined briefly later in this article.

Taxonomy of Information Relevant to Policy Decisions

Again a two-dimensional classification of information (see Figure 2) used in policy decisions was evolved.

The first dimension — *Nature of information* — has five categories. The term, *'Conventional wisdom'*, borrowed from Goodlad,[26] is used to describe the common sense accumulated from past experience. The second category provides *Descriptive information* on an existing state of affairs or program and a means of feedback. In the third category, *Projections and trends*, one variable is charted over time and then extrapolated to yield future estimates. The fourth category, *Predictions based on relationships*, is intended to include information derived from research studies to indicate relationships among sets of variables. Such studies may be experimental but it is more likely that they will be large scale, multivariate and correlational in nature. To be useful to policy decisions, key variables need to be subject to manipulation within the system. Finally,

		Nature of information				
		Conventional wisdom	*Descriptive information*	*Projections and trends*	*Predictions based on relationships*	*Alternatives and their consequences*
Data source	Economic					
	Educational					
	Political					
	Social					

Figure 2 Two-Dimensional Taxonomy for Information Relevant to Policy Decisions

the fifth category is labelled *Alternatives and their consequences.* Some of the alternatives will have been posited by the policy maker but this category is seen as open ended to permit inclusion of information on possible alternatives not originally considered by policy makers.[27]

For this dimension, the five categories are not necessarily mutually exclusive. In some instances, they may be seen as hierarchical and cumulative.

The second dimension included here has been labelled *Data source* with four categories — *Economic*, *Educational*, *Political*, and *Social*. Start[28] discussed 'criteria' for policy decisions under these labels and indicated that on many occasions they may conflict. He further suggested that *Educational* outcomes often had to take fourth place behind *Political* and *Economic* feasibility and *Social* implications. While the existence of such priorities must be recognized, it is very difficult to establish directly the relative importance of different criteria underlying a policy decision. For this reason, categories of data sources available to a policy maker are included in this dimension to describe information.

For a particular policy decision, these four categories are not mutually exclusive. That is, a policy maker may seek information from any or all of the four sources. In the later examples, this information is coded as follows:

\+ information considered; favours the alternative selected;
— information considered; contrary to the alternative selected;
blank information not considered from this source.

The following example of categorizing a policy decision is based on the decision of the Commission on Advanced Education to recommend that general teacher training courses be limited to three years duration.

In terms of the taxonomy shown in Figure 1, this decision was classified as short-term and curricular. (It should be noted that this decision could well become a long-term one under a subsequent review by the Tertiary Education Commission.)

The information on which the short-term decision appears to have been made is shown in Figure 3.

The pattern conveys information on the kinds and sources of data used and, just as importantly, on the kinds of data not used. Moreover inferences may be drawn about the relative importance of different information sources in terms of the pattern of positives and negatives. As part of their continuing interest in this policy decision, the Commission funded a Study into Teacher Education Programs (STEP); and the positives in the Educational, Descriptive information and Educational, Predictions based on relationships cells represent some of the results of the research.

As in the case of policy decisions, information can have other characteristics — for example, analyses to render it more intelligible, a mode for communication, a format and a time for presentation, and so on. Again, these are not included in the taxonomy but need to be considered for different classes of decisions.

		Nature of information				
		Conventional wisdom	*Descriptive information*	*Projections and trends*	*Predictions based on relationships*	*Alternatives and their consequences*
Data source	Economic			+		
	Educational	+	+		+	
	Political	—				
	Social	—				

Code
+ considered: favours alternative selected
— considered: contrary to alternative selected

Figure 3 Examples of Pattern of Information Used in a Particular Decision

Table 1 A Classification of Methodologies According to Information Type[29]

Conventional wisdom	Description and feedback	Projections and trends	Predictions based on relationships	Alternatives and their consequences
	Most evaluation models[30]	Exploratory forecasting	Modelling or simulation	Normative forecasting
	Flow models	Projection models	Monte Carlo techniques	Force analysis
	Network analysis techniques (e.g. PERT,[31] PATTERN[32])	Trend analysis	Path analysis	Cross-impact matrix
		Time series analysis	Evaluation research models using canonical analysis as proposed by Cooley and Lohnes[33]	Bayesian models
		Growth analysis		Contextual mapping
		Cohort analysis		Morphological analysis
		Markov chains	(Delphi techniques)	Ariole
				The scenario

The taxonomy of information discussed above used five categories for *Nature of information*. Although a combination of methodologies is likely to yield the best information in any instance, the different categories suggest some methodologies to be more appropriate than others. Table 1 is an attempt to summarize some possible methodological approaches under the different information categories.

Many of the methodologies listed in Table 1 have been applied in disciplines other than education. Apart from the contribution educational researchers should be able to make in terms of providing relevant timely information to policy makers, there is also a need for some researchers to contribute to the methodology of policy research. This may involve not only the application in new contexts of techniques such as those listed, but it may also involve the modification of these strategies to meet new circumstances or the development of new strategies.

THE INTERFACE OF POLICY DECISIONS AND INFORMATION

The discussion so far has considered two separate taxonomies: a taxonomy for policy decisions in which a particular decision can be located in one cell of the matrix in Figure 1; and a taxonomy of information in which a particular policy decision resulted in a pattern of coding across the matrix of Figure 2. When the two taxonomies are considered together, it is possible to move beyond a particular decision and to search for general patterns. Are some kinds of decisions more likely to be made using certain kinds of information from selected data sources? Do some of the cells from the policy-decision matrix (Figure 1) form clusters with similar informational properties?

The research strategy discussed above is intended to answer these and similar questions. A set of policy decisions within a given system is identified and then classified according to the two taxonomies. In addition to summary descriptions of the distributions of the policy decisions within the two taxonomies, measures of association between the two distributions are explored. Such 'findings' are intended to form the basis for dialogue between policy makers and researchers, thus satisfying one major objective of the proposal to investigate policy research in higher education.

Thus far approximately 50 major policy decisions have been identified and classified. The preliminary work on these (not reported here) suggested some pattern of relationships; it also suggested that the first taxonomy may need modification. The dimension labelled Substantive content may not be as useful as one listing problem areas (for example, teacher supply). Work is continuing on this.

NEED TO DEFINE THE STRUCTURE OF A SYSTEM

One final qualification needs to be made. Where relationships between policy decisions and research information can be identified, some may be system specific. This suggests not only the need to replicate the research in different systems but also the need to give an adequate description of each system studied.

The research strategy described above is intended in the first place to have immediate application within the system under study. As noted earlier, the research 'findings' might also be applied in other systems having similar features. Snow[44] has advocated that researchers give adequate descriptions not only of research samples

but also of research environments in order to enhance both population and ecological validity. Similarly research of the kind described here needs to specify the structure of the system in which policy makers and researchers work. An important feature warranting inclusion in the description of the system is the communication network between policy makers and researchers. Adequate description of this structural component of the system under study will be necessary if findings are to be considered with respect to other systems. Thus a system in which a pyramid structure exists might function very differently from one with a semi-lattice policy arrangement.

SUMMARY

One major concern of this paper has been to seek ways to improve communication between policy makers and researchers in education. It has been assumed that improved dialogue will promote relevant and timely policy-oriented research[15] but will not subject the policy maker or researcher to the restricted roles inherent in commissioned research.

The paper has suggested that one way to initiate dialogue between policy maker and researcher is to focus a research study on the relationship between policy decisions and information relevant to those decisions. To this end, taxonomies were developed to classify research information on the one hand, and policy decisions on the other. The paper then examined potential research methodologies within information categories and discussed the interface between research information and policy decisions.

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8

World-wide Policy-oriented Research: Some Dilemmas

P. J. Foster

Two of the most controversial themes that have undergirded much of the research in the economics and sociology of education in both the developed and less developed world over the last two decades concern the role that schooling plays in the economic development of nations and the relationship between education and equality. There can be little doubt that a major impetus to the enormous expansion in both lower and higher levels of schooling that occurred in the post-war years stemmed (particularly in the less developed world) from the view that formal education had a major role to play in contributing to a rise in the real income per capita of national populations. At the same time, there was an implicit belief that a greater diffusion of education would contribute to greater equality of opportunity and social equity, although up till very recently there were few attempts to define what indeed was meant by equality of opportunity.

The contribution of research to an elucidation of these themes and relationships has been substantial. Yet, the optimism that characterized much of the 1960s has now been replaced by an increasing uncertainty concerning the role that education actually plays in economic growth, and an even more marked scepticism as to whether a greater diffusion of formal education will contribute to enhanced equality of opportunity or social equity. There is a growing sentiment that research on these issues has been unable to 'deliver the goods', yet there is an increasing recognition that the interface between empirical findings and actual policy implementation is a good deal more complex than had at first been supposed. Some might argue that much research on education and development issues has been just as irrelevant to policy considerations, in the same manner as Wilson has noted that most of the voluminous research in criminology has had little to offer the policy maker

concerned with the practical problems of crime control.[1]

Although I would consider that some of this kind of criticism is unjustified and rises from a mistaken view of the nature of research (much of which is not and should not be seen as policy relevant) there are nonetheless a number of problems that have both limited the relevance of explicitly policy-oriented research to socio-economic planning and have led to unpredicted and often undesirable outcomes.

THE NORMATIVE BASIS OF POLICY DECISIONS

The first problematic area concerns the normative questions that must be asked when there is an attempt to translate research findings into policy prescriptions. Most educational researchers are neither by inclination nor training very much concerned with normative issues nor with the value premises upon which their work is often based. Yet only too often they are called upon to offer advice not only through pointing to alternative strategies to achieve given policy objectives, but also in terms of commenting upon the desirability of the objectives themselves. There is a case to be made that the social scientist *qua* social scientist is in some position to comment on the outcomes of alternative educational strategies, but there is no *prima facie* reason to assume that he is more qualified than any other citizen to adumbrate on the nature of the objectives. Unfortunately there is frequently a 'halo effect' that elevates the research specialist from undertaking a legitimate but limited role to his exerting a far more questionable level of influence on general educational policy.

This seems to have been very clear up till recently in the relations between overseas educational specialists and the governments of many of the less developed nations. Overseas experts have not infrequently set the priorities for governments without carefully examining the assumptions upon which these priorities have been based. Thus, during the 60s, it is fair to say that investment in education was usually justified in terms of its putative contribution to economic growth and there was a tendency to set the pursuit of this goal as an absolute priority. When conjoined with the then fashionable view that the economic contribution of education was to be seen largely in terms of its role in the production of high level manpower, it is clear that policies designed to facilitate economic growth paid less attention to issues of social equity. Primary school enrolments in most less developed nations advanced rapidly, but

usually at a proportionately lower rate than tertiary enrolments, and it is likely that generous support at the tertiary level more often than not represented a net transfer of benefits from less to more affluent segments of national populations.

The cumulative effect of educational policies in many less developed nations in the 60s and early 70s was to create greater ethnic and social inequities in educational provision rather than diminish them.

This is not to deny where economic growth is a priority objective that a degree of inequality in educational provision is inevitable and perhaps even desirable. What is important is that a potential conflict in educational objectives should have been explicitly recognized while the emphasis upon priorities should have been less important in matters of policy than the notion of partial 'trade-offs' between alternative ends. In this regard, it seems that a serious hiatus has existed, for example, between research in the economics of education and the application of this research to the broader social goals of the less developed world.

It is ironic perhaps that in the later 70s the pattern of emphasis has tended to change. Far from stressing economic growth as a priority, specialists are now more preoccupied with egalitarian objectives; and the whole issue of equality of educational opportunity in the less developed world is now receiving greater attention. Here again, however, the problem of trade-offs still arises. To what extent do egalitarian educational policies militate against the maximization of economic returns to education? Is economic development with a degree of sustained educational inequality to be preferred to an alternative pattern of educational egalitarianism combined with a lower level of economic growth?

An interesting example of this equity/growth dilemma is afforded by the cases of Kenya and Tanzania. The former nation has, by and large, attempted to maximize the efficiency of the educational system as a selective and allocative agency in the light of broad economic developmental goals. To be sure, educational provision has been greatly expanded but substantial regional and social inequalities still exist. By contrast, Tanzania has tended to view its educational policies in the light of broad egalitarian objectives and has implicitly accepted the notion that the creation of a new socialist state must be a priority in place of an alternative policy of maximizing growth. It is not the task of this paper to examine the assumptions and limitations of these two contrasting strategies except to

note that they both rest upon different normative assumptions about desirable states of human society. Moreover, in the light of these alternative formats, it is clear that the direction of policy-oriented educational research in the two nations is quite distinct and addresses itself to different issues.

Further, it seems that much current discussion of equality of educational opportunity in the less developed world is framed essentially in terms of the rights of groups (whether regional, ethnic, or social) without any consideration of the basic question as to whether the unit of welfare in this regard is not the group but rather the individual or family unit. Policies ostensibly designed to equalize educational opportunities as between groups may, in effect, enhance the life chances of the more affluent members of collectively underprivileged social or ethnic minorities at the expense of the less fortunate members of groups that are ostensibly more advantaged. (In the United States, for example, is one justified in pursuing policies that provide greater educational opportunities for more affluent members of the black community at the possible expense of poor whites?)

These questions seem to be essentially normative ones that simply cannot be ignored in processes of policy formation. If the research worker and educational specialist are to be directly involved in policy-oriented research or consultation, then the normative issues must at least be raised and due consideration given to the social costs that are involved in the pursuit of alternative policies. Perhaps it is fair to say that, in contemporary society, the emphasis upon technical expertise and proficiency that characterizes the practitioners in the field of education and development has not been paralleled by commensurate immersion in what might be loosely termed the 'social philosophy' of educational decision making.

THE ADEQUACY OF RESEARCH AS A BASIS FOR POLICY

The second problematic area in the relation between educational research and socio-economic policy, particularly in the less developed nations, has arisen from an overwillingness to plan on the basis of research findings derived from conceptually flawed approaches, or to assume that conclusions generated in the more developed world are applicable to conditions obtaining in the less developed nations.

The overutilization of policy-oriented research findings based on inadequate theory seems to be best exemplified by the emphasis on

viewing systems of formal education as suppliers of high level manpower. As noted earlier, it was fashionable in the 60s and early 70s to regard shortages in the supply of high-and middle-level manpower skills as constituting one of the major constraints upon economic growth in both developed and less developed nations. It is quite apparent that the proportion of high-level manpower in the total labour force is indeed significantly correlated cross-nationally with the level of economic development of nations. The flaw in manpower theory, however, was to assume that such a correlation had causal significance: rates and levels of economic growth were in large measure determined by the supply of high-level skills and, from this viewpoint, it was possible to argue that the less developed countries suffered uniformly from general and acute shortages of such skills. In practice, there is just as much justification for taking an entirely opposite view: that the demand for high-level training was, in fact, very limited in less developed countries in contradistinction to developed nations. In other words, effective demand (as distinct from some mechanical estimate of manpower needs) for the highly trained can be rapidly satiated in poorer countries. It would now appear that this latter view has more to commend it and there is already evidence of an oversupply of high-level skills in many of the latter. Quite apart from the equity considerations raised in the earlier part of this essay, there are sound economic reasons to believe that, as a result of faulty conceptualizations of the relation between education and the economy, there has been a tendency to overemphasize the production of high-level manpower through the formal educational system in both the developed and less developed worlds.

Moreover a second cluster of untenable assumptions tended to undergird manpower planning theory. The first assumption was that it was possible to define the components of high-level skills in such a precise manner as to convert them into educational or training equivalents. In other words, formal educational institutions, particularly at the tertiary level, were conceived of as essentially passive suppliers of high-level manpower, and their activities could be regulated in such a manner as to ensure adequate outputs of skills to meet putative manpower needs. Clearly attempts at planning of this kind rested upon an assumption of negligible levels of substitutability as between skills in the economy, but most research to date would suggest that over a whole broad spectrum of occupations there is a very high level of substitutability between occupational requirements and types of levels of training.

In the last few years there has been a very radical restructuring of our views concerning the relationship between education and the economy. It is apparent that there is now greater emphasis on the role that primary schooling and more informal processes of education play in the development process, and a much greater scepticism concerning the functions of higher education in the production of skilled manpower. However, the fact remains that the legacy of high-level manpower planning still remains in terms of the probable overexpansion and distortion of higher education: an example where flawed theory has had a serious negative effect on the efficient allocation of educational resources.

My second example in this context refers less to the application of inadequate theory to policy matters than to the possible overhasty extension of research findings from the developed to the less developed world. Thus in terms of the whole issue of equality of educational opportunity there can be little doubt that James Coleman's work in the United States was of seminal importance.[2] His broad conclusion was that children's academic achievement was more influenced by out-of-school or familial variables than by in-school variables and, given the fact that Coleman used aggregate data and mean levels of school achievement and facilities, his findings have proved to be remarkably robust in spite of numerous attempts to question them. The policy implications of this kind of research have, indeed, been of great significance in the United States, for recently there has been less concern with equalizing financial inputs in terms of conventional items such as teacher qualifications, library facilities, etc. and a greater interest in pre-school or compensatory programs that would attempt to minimize the influence of familial variables on achievement.

Is the general scepticism about the role that schools play in achievement entirely justified? Recent research in the United States itself using individual rather than aggregate data would suggest that schools do make a difference particularly to slower learners. Moreover, teacher qualifications seem to have an effect for some groups of pupils and the value-added effects of schooling seem to be of more significance than the comparison of mean scores used by Coleman in his research.[3]

More importantly a number of investigations have attempted to replicate the Coleman Report in a variety of less developed nations, and these efforts may prove to be a valuable corrective to premature application of research findings from the more to less developed

nations.[4] There are parallels to be found: family background is usually a determinant of level of achievement in the less developed world but the proportion of the variance in achievement that it explains differs enormously (it is far less important in sub-Saharan Africa, for example, than in many other developed or less developed nations). One may ask whether the conventional measures of familial socio-economic status employed in western research have the same meaning or relevance in many quasi-traditional societies. Correspondingly there is some evidence that school effects are a little more pronounced in the less developed world and that even such obvious inputs as the provision of textbooks (a fact usually taken for granted in the developed nations) are quite significant determinants of pupil achievement.

Thus, the replication of research in a variety of social and economic settings is essential before there can be any attempt to apply the conclusions of such research in the policy arena. The costs of educational innovation and change are so high that the premature utilization of tentative research results over a whole range of nations can lead to a serious misallocation of resources in the same way that at a more rhetorical level notions of 'recurrent education' or 'learning to be' make little sense in poorer countries.

POLICY-ORIENTED RESEARCH AND PUBLIC SENTIMENT

The third contentious area concerns the relationship between policy-oriented research and the interests and aspirations of the various social or ethnic clienteles that it purports to serve. Coleman has recently argued that in the context of the United States much policy research has been framed either in terms of the interests of research organizations or research contractors themselves or in terms of the collective interests of very limited social groups.[5] Thus investigations concerned with desegregation may have involved the participation of minority groups but there has been little potential advisory input from other segments of the population that also have crucial interests at stake. The question for Coleman then becomes how to create mechanisms through which multiple groups have some influence in the formulation of research that is potentially of vital concern to them.

I think, however, that Coleman's views really involve a far more general issue that is of particular importance in the less developed world. Much research and the planning decisions indirectly based

upon it seem to take place in a social vacuum with the result that the outcomes of policy are rarely in line with expectations or, indeed, run counter to avowed objectives. This raises the whole issue of the viability of macro-educational planning in achieving broad social and economic goals.

Let me illustrate this by reference to much current research and policy that concerns itself with equality of educational opportunity in less developed countries. It should be recognized initially that the social and economic matrix within which educational systems function largely determines the salience of the equality issue. In simple terms, if it were not perceived (rightly or wrongly) that formal schooling was the principal route to income, power, and prestige in these countries, there would be little concern over the whole issue of equality. Schooling is regarded in largely instrumental terms and local clienteles are hardly concerned with the provision of education for its own sake. This suggests that a good deal of the educational equality issue might well be defused through a manipulation of social and economic parameters external to the educational system, but such indirect strategies hardly commend themselves to educational researchers and planners who accept equality of educational opportunity as a given objective.

Once this latter objective becomes the frame of reference, then it is immediately apparent to the observer that most less developed countries are indeed characterized by enormous regional or ethnic disparities in access to education and a significant amount of current descriptive research is concerned with mapping such disparities, presumably with the ultimate policy objective of evening up the provision of schooling as between areas. However, the fact is often ignored that existing differentials are themselves a result of a complex process of general social and economic change, wherein educational differentials are intimately associated with and consequent upon other changes such as the level of monetization of the local economy and the degree of urbanization that has already taken place. To put the issue another way, apparent inequalities in educational opportunity are, in large measure, a reflection of highly differentiated patterns of educational demand as between regions and districts and not necessarily the result of neglect or discrimination. Many less developing nations are aggregations of highly differentiated socio-economic regions where the development priorities (if they may be called such) of local populations are totally at variance with the objectives of national educational planners.

(One can call to mind examples in sub-Saharan Africa where educational facilities have been provided for local populations whose own concerns were more focused upon the provision of more adequate water supplies or transport networks.)

From this perspective then it would seem that a good deal of research on the national demography of educational provision (interesting though it may be as an exercise) simply misses the main policy point. The unit of educational planning should not be the nation but rather the socio-economic regions within the nation, and the attempt to even up regional educational provision may be counter-productive in terms of the economic development of individual regions and in the long run may not even contribute to a greater degree of equality as between them.

Here is a case where research based on macro-educational objectives may have little to do with the aspirations or felt needs of local populations. As Weiler has suggested recently, there is in most nations a need for greater transparency and participation in educational policy which will, in turn, significantly influence the character and direction of policy-oriented educational research.[6] Undoubtedly this implies a much greater decentralization of the educational decision-making process — a trend, I believe, that will be of equal concern in the developed as well as the less developed world. Above all, this trend may itself lead to a good deal less of what might be called policy-oriented non-research that in fact makes little contribution to the felt needs and problems of the citizenry.

One might suggest, for example, that many of those units concerned with education and manpower planning might well be dispensed with, without much loss to the viability of the educational enterprise or damage to the needs of the occupational structures of many nations. It should be clear enough by now that continuing exercises concerning the calculation of future demand for education and the estimation of manpower needs are, in large measure, futile since the level of demand itself is dependent on the existence of certain variables that so far have fallen outside the purview of policy-oriented research. How does one speak of the demand for university places, for example, without reference to cost considerations and the possibility of using the principle of user finance as a policy instrument? How can one calculate manpower needs without reference to substitution effects and the likelihood of different skill mixes in the market place? Perhaps the answer in this case is less emphasis on inadequate policy-oriented research and the utilization

of a more market-oriented approach to educational planning wherein potential consumers of education have more opportunity to express their own needs.

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9

Research and Educational Policy: Reflections and Recommendations

L. C. Higgins, K. E. Sinclair and J. L. Sheppard

Despite their diverse backgrounds, not one of the administrators and researchers responsible for the preceding chapters questions the view that research and educational policy making should be closely allied.

In his chapter, Parry makes the point that certain trends in administrative practices and orientation have heightened the need for a significant research component in educational decision making. He especially emphasizes the need for the development of educational research facilities which have both real and apparent independence and objectivity. This need has arisen, Parry suggests, as a concomitant of the so-called democratization of educational decision making. With this development, the forces of vested interest and parochialism of one kind and another are given more scope. Research contributions are essential to counter these trends.

A similar call to administrators to look more to their research staffs than to committees was made by Hardie[1] over a decade ago. He was prepared to argue that research in education must necessarily be of an operational kind, i.e. concerned not with increasing knowledge but with the direct support of educational planning and practice. While many researchers would reject this narrow interpretation of educational research for a broader one which acknowledges the importance of conclusion-oriented or basic inquiry, few are likely to challenge Hardie's belief in the productive potential which lies in a healthy alliance between educational research and policy formation.

Opinions differ, however, concerning the best way to effect this alliance. One possibility is to confer on research a service function, the onus being on the policy maker to spell out policy needs, while the responsibility of the researcher is to meet those needs as com-

prehensively and as relevantly as possible. Against this view may be placed the contention that policy-oriented research is likely to influence broad assumptions and beliefs underlying policies rather than particular decisions. This implies that policy research needs to be seen as leading to a discourse between researcher and policy maker, a discourse in which both parties have freedom to initiate, question, express views, and so on.

Despite the widely held conviction that a vigorous alliance between educational research and policy making should exist or be established, there is reason to suspect that progress in this direction has been slow. A recurring theme in much recent literature is that of frustration and disappointment concerning the impact of research on policy and development in education. Even in the United States where there is a large and sophisticated commitment to educational research, expectations exceed performance and the prevailing mood is one of disenchantment rather than conviction and optimism. Against this background, it is both reasonable and important to ask whether or not in Australia the alliance between research and policy formation is as harmonious, robust, and fruitful as might be desired or expected.

In this concluding chapter, broad consideration is given to this question. The approach adopted involves a discussion of three issues which bring together many of the concerns and themes made salient in the preceding chapters. The three issues are:

(a) the contribution of research to educational policy formation in Australia;

(b) the kind of research of most value to policy makers;

(c) problems involved in forging a more productive alliance between researcher and policy maker.

The discussion of these issues draws heavily on the material contained in the earlier chapters. No attempt is made to review this material comprehensively, but an endeavour is made to identify and to reflect upon those matters which have attracted most comment or received most emphasis. Several recommendations concerning the relationship between research and policy making in Australia emerge from the discussion and these are summarized in the final section of the chapter.

Until very recently, the amount of educational research undertaken in Australia was expanding rapidly. Prominent among the factors responsible for this expansion are those outlined by Senator Carrick in his paper: the increase in Federal funding; the establishment of the Education Research and Development Committee (formerly the Australian Advisory Committee on Research and Development in Education); and the setting up of Commonwealth agencies directly committed to research and development work, for example the Curriculum Development Centre.

The intensification of research activity over the past decade might suggest that there has been a corresponding increase in the research contribution to policy formation. If overseas experience is any guide, there does not appear to be any automatic or direct relationship between the amount of research activity and the degree to which the outcomes of that activity influence educational policy. In the United States where educational research has flourished under generous government sponsorship, there are strong indications that decision making and policy development have derived distressingly limited benefits from the research that has occurred.

Several factors that have impeded the relationship between research and policy formation have been identified and discussed at various points throughout the preceding chapters. Inadequate and inappropriate procedures for communicating research findings to administrators is one factor that receives particular attention. Another is a failure by administrators and researchers alike to anticipate and thus to provide for long-term needs in policy research. Foster highlights the insensitivity of many educational researchers to normative issues and value premises which must be taken into account if educational policy is to be compatible with wider social needs, aspirations, and attributes. Factors of the kind indicated can be overcome; and a later section of this chapter is devoted to a discussion of measures that might be taken in order to eliminate or to minimize their influence.

Other constraints limiting the interaction between research and policy formation are largely unavoidable, and this fact must be taken into account when evaluating the significance and extent of research's contribution to educational decision making. One such constraint arises because certain decisions are dominated by political,

economic, and social considerations which lie outside the province of educational research. A second inevitable constraint is manifested because the methodologies of educational research are not always adaptable to the time requirements and other specifications which the administrator and policy maker find necessary to impose. Because they are unavoidable, these constraints are universal in their operation. They are encountered in the Australian context as in any other. Dunn is justified, therefore, in cautioning us to be modest in our expectations concerning the contribution of research to educational policy in Australia.

Research and Policy: An Area for Study

Exactly how and to what extent research has influenced educational policy in Australia is difficult to assess. Examples of research-policy interactions are given in several of the papers, but nowhere is reference made to empirical studies focusing explicitly and directly on the relationship between research and educational decision making. It appears that, if such studies have been undertaken, they are few in number and not widely known. The paper by Baumgart and Low indicates one important line of enquiry that should be pursued in an endeavour to objectify our understanding of the way the policy development process is, or could be, served by research.

Given the concern expressed by several contributors to this book that the alliance between researcher and policy maker is somewhat underdeveloped, a strong case can be argued for making the nature and problems of the alliance the subject of extensive examination. Work could well start with the investigation of the ways in which researchers and policy makers interact within institutional and systemic structures. The hypothesis advanced by Rawlinson, that administrative control and freedom for research are inversely related, represents the kind of issue that could well be taken up. Other promising research directions are indicated by Rawlinson. While recognizing that structural and functional proximity between researcher and policy maker is desirable, he sees problems arising from a failure to understand the proper role and the requirements of the researcher, especially the requirement of a climate or context in which freedom, initiative, and impartiality can be exercised. Research into the perceived and actual roles of researchers in administrative systems could define the extent of the problem and might well serve as a first step towards establishing researchers in more appropriate and effective roles relative to policy makers and to

administrators in general. Research along these lines could be broadened to include surveys of the research agencies which exist in institutional and systemic contexts throughout Australia. There would be value in knowing how these agencies operate and how they are related to the processes of policy making and administration. It would be of value also to identify innovations in the area of research-policy interaction. Awareness of such innovations could encourage others to undertake similar initiatives or at least to adopt an evaluative stance in relation to their own assumptions and practices.

Evaluation of the Research-Policy Alliance

Although the picture is unclear for lack of formal study, it is apparent that research has guided policy to some extent in the Australian educational context. Several of the papers contain examples of policy decisions which were taken in the light of research findings. The abandonment of the Commonwealth Secondary Scholarship Examinations scheme is one such example. The introduction of the disadvantaged schools program is another. Further examples could be cited, but it would be mistaken to infer that all or even most major policy decisions in the Australian educational scene have been enlightened by information and guidelines drawn from research. The impression gained from Dunn's paper in particular is that in many, perhaps most, instances there has been too little research too late.

While Keeves in his contribution strikes a positive note, arguing cogently that educational research if appropriately conceived and designed can have a significant influence on educational practice, none of the contributors appears able to affirm that research and policy formulation are as effectively allied as they should or could be. It is highly unlikely that any of them would challenge the suggestion that the educational research-policy alliance in Australia is underdeveloped, probably seriously so. It is possible that some would even support the view that the alliance is a casual and haphazard affair rather than a resolute and reliable partnership.

If this is a valid assessment of the prevailing relationship between educational research and policy development, then it is essential that researchers and administrators confer to determine what must be done to improve the situation. Perhaps the initiative in this connection rests with the Federal agencies responsible for the funding of educational research. On the other hand, such bodies as the Australian Association for Research in Education, the Australian Council for Educational Research, or the State Institutes of Educational

Research may see it as part of their brief to play a significant initiating or enabling role in this connection.

THE KIND OF RESEARCH OF MOST VALUE TO POLICY MAKERS

Turning now to a consideration of the kind of research that is likely to increase the impact of educational research on policy making, three questions are brought into focus:

(a) For the needs of policy making, what is the relationship between basic (conclusion-oriented) and applied (decision-oriented) research?
(b) What research methodology is most appropriate to policy making?
(c) What role can meta-analysis (research on educational research) play in policy making?

Basic v. Applied Research and Policy Making

The question of what kind of research is most worthwhile for educational policy making has been answered in the United States, most often, in terms of research that is more applied in nature and relevant to pressing educational problems of the moment.[2] In responding to this argument, United States fund-granting agencies over the last decade have increased the proportion of their funds available for applied problem-oriented projects. There has also been an increase in the commissioning of educational research. Because of this, topics for research are being increasingly formulated by governments and education departments rather than by the researcher. The researcher applies his methodological skills and skills in data analysis and interpretation to topics decided on by others. A similar tendency is occurring now in Australia. Dunn discusses the increasing tendency to commission projects and the need to establish priorities in educational research. Senator Carrick similarly speaks of the need for political and social priorities in educational research to be established. Parry argues that 'the opportunity to research at personal will is a luxury and, like all luxuries, is likely to be enjoyed by a comparative few'.

Will this change of emphasis ultimately improve the impact of educational research and the education of our children? The danger is that the pendulum may swing too far in the direction of applied research and away from research of a more basic nature. There is a strong case for increasing the amount of applied research; research arising from the class-room has been neglected in the past. It will be

essential, however, that it should not be increased at the expense of basic research. The danger with an overemphasis on problem-oriented research, as Start[3] has argued, is that by concentrating on immediate problems it makes itself redundant as regards major policy decisions which tend to be much more long range in nature.

It appears important to be much more aware of the long-term implications of research. From a long-range point of view, the attempt to arrive at understandings that will be of value to policy makers will be most productive when there is a close and balanced interaction between basic and applied research, between theory building and the search for practical applications. Applied research feeds on the insights of basic research, and basic research in turn is invigorated and made more relevant by goal-oriented enterprises to do with applications. Piaget and other researchers, for instance, have presented very important insights into the cognitive development of children. Those insights *per se* have little direct practical application, although they have been a very fruitful source of hypotheses for applied classroom research. Furthermore the results of many of those applied studies have increased our understanding of cognitive development in children and adolescents.

The argument, then, is that a close and unhurried interaction between basic and applied research is highly desirable. To achieve a more equally balanced situation there is a need to encourage more applied studies, that is, studies starting from questions arising in the classroom as compared with questions arising from theory. Yet we must resist the tendency, which has been apparent in the United States, of stimulating research of immediate practical relevance at the expense of basic research.

Research Methodology and Policy Making

The second question has to do with the methodology of educational research which is likely to be of greatest value to policy makers. There has been in our profession a tendency to give undue emphasis to experimental methods of data gathering and analysis and to denigrate other methods, especially what might be called descriptive and naturalistic data-gathering methods. Again, while in no way wanting to question the importance of experimental methods, to see them as the only worthwhile methods is both myopic and limiting. In particular, by themselves, experimental methods are of only limited value in yielding information for the policy maker.

In understanding the teaching-learning process in our schools, we need as a basis a broad picture of the characteristics of the students,

their home backgrounds, the activities taking place in the classroom, and the relationships between student and teacher characteristics and methods of instruction. Descriptive and naturalistic data-gathering methods are particularly appropriate for use in building up such a picture.

We often seem to be unable to defend what we are attempting to accomplish in education because we lack this quite basic type of information. It is also just this type of information that is most wanted by policy makers and by those who influence policy, such as politicians, parents, and the media. The recent debate over educational standards provides a case in point. Despite all the testing that goes on in our schools, we were unable to produce convincing evidence one way or the other on this issue. Similarly the failure to predict earlier the current oversupply of teachers provides a further illustration. Quite basic factual data were not available or attended to. In his paper, Williams points out that deliberations of the Committee of Inquiry into Education and Training were hampered because universities, CAEs, and TAFE institutions were often unable to provide even the most elementary information about student numbers.

The point is that we should be much more aware of the range of methods available to the educational researcher and the particular advantages (and limitations) of each method. Baumgart and Low make a valuable attempt to do this. In particular there is a need for more effort to be given to increase the data base concerned with describing the important components of our system of education and the ways in which they are changing, and with describing relationships between these components. Such a data base has an important place in other fields such as economics, medicine, sociology, natural science, politics, and so on; and there is a need for a more concerted effort to build up this type of data base in education as well. Excellence in design and analysis is no less a requirement for such descriptive data gathering. Keeves in his paper provides a good example of how such techniques may be used to advantage.

Meta-analysis and Policy Making

The third question is concerned with how we may make the most of all the educational research that has already been published. Using already published research is of particular importance to the policy maker and perhaps comes closest to Baumgart's concept of policy-oriented research. Senator Carrick also makes a strong point about

the importance of this for the policy maker and draws attention in this regard to Gene Glass's work on meta-analysis of research data.

Having done the research, what then? More will be said about this in the next section. It should be stated here that, if educational research is to have an impact, there is a need for results obtained to be distilled into information that is clear, simple, and public. It needs to be clear and simple so that it may be meaningfully and readily understood by decision makers such as politicians, officers of education departments, and so on. It needs to be public so that the media may use it to increase the range of impact to parents and others who influence the decision makers.

Glass's meta-analysis has been specifically designed to do this. Basic to the analysis is the application of a metric to a wide range of studies to establish the size of the effect of some educational treatment. For instance in a meta-analysis concerned with class size and its effects, 725 separate comparisons were able to be made between classes of two varying sizes, revealing that reducing class size has particular effects on student performance. The results of the analysis are able to be expressed by a single line graph from which it is possible to read off a person's percentile rank on achievement as a function of class size. For instance, with class size equal to thirty, the average child will achieve with a percentile rank of about 53. As class size falls to 20, his percentile rank will increase to 55; if it falls to 15, his percentile rank will be 60. Policy makers, Glass argues, are not prepared to cope with conclusions from educational research consisting of 22 or 23 separate statements and conclusions.

He aims for a single conclusion which may be represented by a single line graph. On the one hand, this is a very attractive and indeed quite impressive way to demonstrate that educational research is able to yield straightforward and seemingly unambiguous conclusions. On the other hand, there is the feeling that the very gross nature of the analysis and its explicit desire to avoid the question of complex interactions among variables will unduly oversimplify what is happening in the teaching-learning process. Nevertheless meta-analysis is gaining a lot of attention and its use will undoubtedly increase in the years ahead.

The third major issue emerging from the previous chapters relates to the problems hampering the relationship between researcher and policy maker. Of the several problems identified and discussed, four of particular salience were:

(a) dissemination of research findings;
(b) funding of research;
(c) availability of time for policy oriented research;
(d) the intrinsic complexity of educational research.

Dissemination of Research Findings

It has been emphasized that there is a lack of communication between policy makers and research workers in Australia.

Dunn has noted a strong need for publications that can bridge the gap. The Education Research and Development Committee has made attempts to help, such as by bringing together research workers and decision makers at special seminars, and by circulating draft reports. However, a need is seen for the publication of popular versions of research reporting rather than the more sophisticated technical documents. Publications in a digest format could greatly help bridge the gap. Senator Carrick sees a clear need for administrators to have research summarized for them, so that decision makers are receiving information in a language that they can understand, and in a compact form so that they can readily absorb its content. Baumgart has noted that it is rare for dissemination to occur in a form that the policy maker is likely to use.

An effective liaison between researchers and policy makers can therefore hinge on the problem of effective communication and dissemination. It is a key issue. Even if very competent research is carried out, and even if it is highly relevant for policy making, its impact may end up being negligible if there is a failure to let the policy maker know and understand the significance of the main findings. Very often this failure does occur because special steps to establish the communication are not taken. As research workers have preferred to write up their material for presentation to an audience with similar outlook and background to themselves, they submit their report to a technical journal, or perhaps present it in book form. They rarely produce a special document for consideration by policy makers.

Parry has pointed to the value of policy analysts who can draw out the implications for policy from research projects and develop recommendations for consideration by the policy makers. Experts could be specifically employed to carry out this task. They would not be conducting research; they would be drawing on current research being conducted by others and could be a link between the research worker and the policy maker. Senator Carrick speaks of a 'research broker', who can stand between the researcher and the policy maker and can integrate research in an area so that it can be of value to the policy maker. Both Parry and Senator Carrick are referring to the same kind of person under two different titles.

If policy makers are going to make fair and appropriate applications of research data, there is a need for the research workers to be very clear and straightforward in establishing the implications of their research for policy making. Senator Carrick has noted that inaccurate interpretations may be made by the policy maker when he does not have a sufficient basis to make his decisions, and findings may be misused. There is less likelihood of such misuse if personnel in the field of education are more informed about research procedures, and to this end Senator Carrick has suggested that in the training of teachers a special effort be made to give them a sufficiently substantial knowledge of research methods so that they understand how to implement research findings. Effective dissemination of research data cannot really occur unless the receiver of the information has some basic knowledge of the research process.

Programs in teacher training courses are likely to have a long-term effect rather than an immediate effect. More immediate results could ensue from a further suggestion by Senator Carrick, that there is a need for a 'clearing house' for Australian research information. It is true that at the moment the Australian Council for Educational Research is a central body that is very effective in receiving and disseminating information, but there is still a place for a central repository of Australian research that can process current projects, so that information comes in and goes out.

Funding of Research

The allocation of funds for educational research in Australia has never been a very high proportion of the budget. The Education Research and Development Committee, the Australian Council for Educational Research, the Schools Commission, the Curriculum Development Centre, the ACT Schools Authority have all been mentioned as vehicles for the distribution of research funds in

Australia. Senator Carrick has shown that there have been some increases in funds, but in 1979 ERDC funding was reduced, and the same thing happened in 1978. Comparisons with the United States are rather stark. It is not uncommon for an American project that is a counterpart to an Australian project funded for $20 000 to receive $1 000 000. The present economic climate is certainly not conducive to increases in this area. Such a factor considerably militates against the potential for educational research in general in Australia, and makes the problem of liaison between research and policy making even more difficult than it would be if funding was liberal. Lack of funds can have the effect of channelling researchers' interests away from policy-relevant research rather than towards policy-relevant research, because in many ways the latter is more difficult.

Availability of Time for Policy-Oriented Research

Problems arising from lack of funds have implications for time factors of research. In Australia, Dunn has observed, projects normally do not receive sufficient funds to enable a comprehensive longitudinal study to be completed. Very often the best kind of research to have valuable implications for policy making needs to be longitudinal. To do this one not only needs sufficient funds, but one also needs to have the time available. Planning needs to have been made sufficiently in advance so that there is time to collect data that will be relevant for the ultimate policy decisions. Problems of funding create uncertainty for a research team about whether the funds will continue long enough, and additional problems arise when one considers the need for continuity of membership in the research team. Often there simply is not enough time available before the policy maker has to make his decision, as Parry has observed. A comprehensive study cannot be completed in time, so a more hurried and truncated project has to be undertaken. Very often the research project requested by the decision maker is requested far too late. The problems of the policy maker can well be appreciated, as it is not easy to know in advance what the major policy issues are going to be, and it can take several years to complete a major study. In fact, Dunn has found that research reports may be presented after the policy decision has been made, because there was not enough time available for completion, and the value of the study for policy has been lost.

The time variable as a major one for policy-relevant research is highlighted by Baumgart's proposal, in his taxonomy of policy deci-

sions, that 'time is one of the two central dimensions to decision making'.

It is very often the case that time is a major factor in determining that important policy decisions have not been influenced greatly by research evidence. In order to apply research to the problem, the policy maker finds that he is forced to rely on what happens to be available, and often research findings are simply selected to legitimate a decision that has been previously made. Parry has predicted that we can expect this to continue, and that some research findings may be deliberately sought so that they will reinforce a pre-established decision. He argues for a strong need for independence and objectivity in educational research for policy making.

The Intrinsic Complexity of Educational Research

Policy makers in education have an unenviable task when it comes to applying research findings to a specific decision. Part of the difficulty can arise from the fact that educational research inherently has major complexities that are fairly unique to it, and not necessarily found in some other research areas such as the physical sciences. The social sciences have the difficulty of working with data about human beings, and it is very difficult to control and contain all appropriate variables. It thus happens that, as Baumgart has mentioned, results of educational research conducted by different research workers are often equivocal. Different research workers studying the same problem may come up with different answers. Indeed, the one research worker may discuss his findings with so many qualifications that it is difficult to extract one main clear feature. A further problem is that some of the implications from educational research do not lead to satisfactory practical applications.

Some of these problems arise from the fact that educational research is often interdisciplinary and may involve the disciplines, mentioned by Keeves, of sociology, anthropology, psychology, political science, and economics.

As with all research, but perhaps more particularly with research in the social sciences, there is a risk factor. One cannot be sure what the result will be, and there certainly is the possibility that the research outcomes may not be pleasing to the policy makers who had been hoping for findings in a particular direction. Legitimate educational research has to be value free and, as Dunn has observed, policy making often involves value decisions.

This chapter has been concerned generally with the state of the alliance between educational research and policy formation. Drawing on material presented in the earlier chapters, we have attempted to derive a broad view of the way researchers and policy makers interact in the Australian educational context. The picture that emerges provides no room for complacency. In fact, there are strong grounds for concluding that the endeavours of researchers and policy makers are far from satisfactorily allied, neither group being adequately attuned to the obligations and needs of the other. Although formal research evidence is lacking, it is clear that many educational decisions at both the policy and planning level have been and continue to be taken without reference to research findings. It is also apparent that much remains to be done in defining the research needs of administrators and in determining what kind of research and research report is of most service to them. There is much to be done too in identifying and overcoming the problems which are so obviously impeding productive interaction between researcher and policy maker.

In this final section, several recommendations for improving the alliance between the two groups are advanced. The recommendations refer more to broad directions for action than to specific procedures, but it is hoped that they are sufficiently compelling to invite constructive effort from those persons and institutions best qualified and able to engage in the task of strengthening the alliance between educational research and policy making.

1 The modes of interaction between researcher and policy maker should become the subject of wide-ranging and sustained research, the principal objective being to find answers to such questions as: How are researchers and policy makers associated in systemic and institutional settings? How is policy-oriented research initiated and undertaken in Australia? What forms of communication and dialogue between researchers and administrators have been established?

2 Consultations between researchers and policy makers should be organized on national, state, and other levels in order to promote mutual understanding of the respective needs, roles, and problems of the two groups and to encourage the search for optimal modes of association and interaction.

3 Applied or decision-oriented research should be encouraged but not at the expense of basic or conclusion-oriented research.

4 Researchers should become more aware of and more prepared to use methods capable of providing the kind of naturalistic and descriptive information which is necessary for a broad understanding of the teaching and learning process.

5 A national clearing house on research information in Australia should be established.

6 A team of 'research brokers' or 'policy analysts' should be employed on the staff of the clearing house, and such brokers and analysts should use those procedures, e.g. meta-analysis, which convert research findings into information more likely to be of use to administrators.

7 An increase of funds should be allocated to educational research, with a special amount designated for research applied to policy making.

8 Substantial courses in research method, interpretation, and implementation of research findings should be presented in tertiary courses for teacher education.

9 Research workers should give deliberate consideration to the policy implications of their work, and communicate these not only in academic papers and technical reports but also in summary statements and in forms most useful to policy makers.

NOTES AND REFERENCES

[1] C.D. Hardie, Research and progress on education. *Australian Journal of Education*, 1965, 9 (3), 225-238.

[2] See, for example, F.N. Kerlinger, The influence of research as education practice. *Educational Researcher*, 1977, 6, 5-12.

[3] K.B. Start, Reality for the researcher. *American Educational Research Journal*, 1975, 12, 323-336.

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